The Builder.

VOL. LIII. No. 2334. SATURDAY, OCTOBER 29, 1887.

ILLUSTRATIONS.

St. Alban's Screen, Restored.—Sculpture by Mr. Harry Hems 600-601
St. Alban's Shrine, St. Alban's Abbey: South-East View 604
"Terry's Theatre," Strand.—Mr. W. Emden, Architect 605
The New Club-House, Newcastle-upon-Tyne.—Mr. M. P. Manning, Architect 608-609
Newport-road Schools, for the Leyton School Board.—Mr. J. T. Newman, Architect 612
"Eddesbury," near Liverpool.—Mr. J. Francis Doyle, Architect 613
Holy Trinity Church, Gateshead.—Messrs. Oswald & Son, Architects 613

CONTENTS.

The Late Mr. Beresford Hope 589
British Museum: Room of Greek and Roman Sculpture in Relief 590
Notes 591
"Old Bricks for Sale."—Bow-street and Covent Garden 593
The Architectural Association: The President's Address 594
The Screen at St. Alban's 597
St. Alban's Shrine 598
Terry's Theatre, Strand 598
The New Union Club-House, Newcastle-upon-Tyne 598
Newport-road Schools, Leyton 615
Principal Entrance, "Eddesbury" 615
Holy Trinity Church, Gateshead 615
The Fire at Whiteley's 615
Case under the Metropolitan Building Act: Neglect to give Notice to District Surveyor 617
The Walls of Chester 617
Public Appointments 617
Competitive Designs for Willesden Public Offices 617
Terry's Theatre 617
Extensions at the Royal College of Surgeons 617
The Student's Column: Land Surveying and Levelling.—XVIII 618
Recent Patents 619
Recent Sales of Property 619
Meetings 619
Miscellanea 620
Prices Current of Building Materials 620

The Late Mr. Beresford Hope.

THE death of Mr. Beresford Hope calls for something more than a passing notice in the pages of a journal devoted to architecture, if only on account of the fact that he was the only amateur since Earl de Grey, the first President, who was ever considered worthy to fill the office of President of the Institute of British Architects. But apart from this claim to commemoration, the active part which Mr. Hope took in promoting church building, his great munificence in aid of such work, his knowledge of and enthusiasm for Mediæval architecture and art, his loyalty towards all that was best in the architectural profession, and his interest in their work, render his a name of which all English architects will think with regard and gratitude. There is something beyond this, too, which the death of Mr. Hope suggests. For he may be said to have been one of the most prominent representatives of a great movement which has run its course and passed away. His name is indissolubly connected with the Gothic revival and with the great modern church building age of the England of this century. Many of us can remember well how great was the zeal, how fervent the hope and enthusiasm for the future, which characterised the writings and speakings and the whole course of action of the leading architects and ecclesiologists who were associated with that movement; how certain they all were about it, how fully persuaded in their own minds that there was a glorious future for English Mediæval architecture, starting on the basis of the great works of the fourteenth or the thirteenth century (for in this matter there were fluctuations of faith) and going on continually to greater and nobler developments. And of this faith Mr. Hope was no wavering or backsliding disciple. He stuck to his guns to the last, and, with a persistence which had its pathetic aspect, he, at the last meeting of the Architectural Museum at which he presided, went through the same profession of love for and belief in Mediæval art as the starting-point of modern architecture, before an audience which gave him its applause and respect, but not its credence. The movement with which he was so closely associated died, in fact, before him. And now his own death seems to remove one of the most noteworthy links between us and a past period of architectural history, which, so fast do things move in these latter days, seems already far behind and forgotten, hidden away, as it were, behind the balustrades and flower-pots of the new Renaissance. Let us think kindly, however, of the Gothic revival and its champions. All revivals are in their nature doomed to be transitory; but at least the Gothic revivalists worshipped a noble and pure phase of the art, which stooped not to such gauds as pots and balustrades.

Mr. Hope was born in 1820, the son of the Mr. Thomas Hope who distinguished himself as the author of a kind of modern Greek novel or romance under the title of "Anastasius," from which he got the sobriquet of "Anastasius Hope," by which he has been sometimes referred to in print as if it were his real name. Mr. Hope the elder had, however, other claims to remembrance besides this work, which have been overlooked in the notices which have appeared in the daily papers. He was the author of a book of illustrations of "Household Furniture and Interior Decorations," executed from his own designs, which was published in 1807, and consists of a number of finely-executed outline plates of rooms and furniture designed on severe antique models; and he also wrote a "History of Architecture," in two volumes, published in 1834, which is, of course, out of date in the light of recent archæological knowledge, but which is a well-written and comprehensive treatise from the point of view of the author's day, and deserves not to be forgotten. Both the wealth and tastes of the son may be said to have been hereditary, for Thomas Hope was an enthusiast about Greek art and architecture, which was the taste of his day, and the son's architectural proclivities turned in the same manner towards Gothic, as the taste of his own day; the general interest in art and architecture was inherited; the particular form it took in father and son respectively was merely an example of harmonising with the environment. Mr. Beresford Hope's architectural leanings were probably influenced by,—at least, they were closely connected with,—his ecclesiastical creed: he was throughout his life an earnest and devoted adherent of the moderate High Church party, and was one of the first and most important members of the Ecclesiological Society, in which sound Church views and correct Gothic detail went hand in hand.

The election of Mr. Beresford Hope to the office of President of the Institute of Architects, to which we have already referred, did not take place without considerable opposition and paper warfare, as our own columns of the early part of the year 1865 bear witness; and we then expressed our decided opinion, with the greatest respect and friendly feeling to Mr. Hope, that the election of an amateur President as the head of an essentially professional body was a mistake, especially in regard to the discussion in Council of the many purely professional questions which must inevitably come before such a body. This opinion no one at the present moment will be likely to dissent from; but it must be added that in the address which Mr. Hope delivered from the presidential chair at the opening of the Session 1865-6 of the Institute, he did much to justify, so far, the choice of the majority who voted his election. Instead of giving, as might have been expected, an address from his own special point of view as an ecclesiologist, Mr. Hope adopted the broadest view possible of the profession of architecture; and his address (which will be found in the *Builder* of November 11, 1865, under the heading "Architects, Engineers, and the Coming Season") was in the main a most sensible and well-written appeal in favour of doing away with the strong but, as he considered, arbitrary and unnecessary line of demarcation which in modern times has been drawn between the profession of architect and engineer. He wished to see engineers included in the ranks of the Institute of Architects, that so each branch of the profession, now too much separated, might be drawn into closer union, and each might learn something from the other. "The world should not," he urged, "continue to deceive itself with the belief that Stephenson and Brunel were not architects,—self-made architects, it may be, just as the mathematician Wren and the physician Perrault were self-made architects, but, like those worthies of the seventeenth century, great architects. The notion that because to them architecture came without its usual training, therefore the engineer is for the future to dispense with the trained and learned architect for the construction of buildings whose monumental elevation gives its colour to our age, is a wrong on our whole craft of architecture." The idea which Mr. Hope proceeded to enlarge upon was that all works were not engineering, in the true sense of the term, because they were executed by engineers; that great railway stations and viaducts were really works of architecture; those who erected them were in reality doing, well or ill, architectural work; that in order to do it well they required architectural training and study, the study of the past, as much as those who undertook any other class of building; whereas pure engineering practically repudiates the past, or uses it only to point a self-exalting contrast. "I do not say," he added, "that engineers themselves do so; but this repudiation of the past is the necessary price at which the constructive part of the engineer's business can any longer be formally divided from architecture." In the

same address Mr. Hope took a very high view of the part which ought to be played by the Institute of Architects.

"The Institute ought to be, without rival and without demur, the central regulating Areopagus of Architecture,—of architecture as a science and architecture as an art; of architecture as practised by its professional votaries, and as studied by the amateur,—as loved by both,—throughout this imperial realm. The time should come when the absence of those letters which denote some grade in the Institute from the name of any one who practises architecture should be as much cause for inquiry, as the absence of academic distinction from that of the clergyman who has the misfortune to be a 'literate.'"

Thus the amateur president sketched out a position for the Institute which it has certainly of late been doing its best to fulfil, and which it may entirely fulfil if the best members of the architectural profession will be true to it and to the highest interests of their profession: for that is where the rub really lies.

Among Mr. Hope's various essays and addresses on architectural subjects are some which will repay perusal, even from the standpoint of the present moment. Some of the best of these were addresses delivered at the Architectural Museum, and published afterwards as pamphlets. In one entitled "The Common Sense of Art," delivered in 1858, he gave a fairly comprehensive view of what he thought might be evolved in the way of architectural novelty and originality, from an eclectic study of the whole field of Gothic architecture, answering at some length the question he quaintly propounded at the outset, "What are we to eclect?" Eclecticism has run wild since then, but Mr. Hope's view was a broad one for the time, and would have been thought by many conservative Gothicists of that day a great deal too broad. Thus it is, in architecture as well as in politics; the liberalism of one generation is the conservatism of the next. In another address, given at the same place in 1864, on the "Art Workman's Position," he made one claim for the art-workman which is only now beginning to meet with any response, viz., that the name of the actual maker and designer should be connected with a piece of art-work, and not only the name of the people who sell it; and he urged this not only on behalf of the art-workman in order that he might have the credit of his work, but on behalf of art and of the public, in order that the actual executor of the work might have the stimulus to do his best which can only exist along with public reputation for his work, coupled as it must be also with liability to wholesome public criticism.

Mr. Hope's most important contribution to the literature of architecture was, however, his book, published by Mr. Murray in 1861, on the "English Cathedral of the Nineteenth Century." This is, of course, in one sense, purely a Churchman's book, and some portions of its contents deal rather with what may be called ecclesiastical polity than architecture; but, so far as it deals with the architectural question from the writer's point of view, it is admirably done, clearly and eloquently written, and very carefully illustrated. A great point in the book is the stress which he laid on the desirability of large-scale churches, churches of cathedral type, in fact, if not quite of cathedral size. He wanted a small number of impressive and spacious buildings rather than a greater number of small parish churches of the average scale and pattern; and if the most is to be made out of the picturesque and artistically elevating side of church worship, there can be no doubt that he was in the right. The whole book is, of course, based on the assumption that Gothic is the only style to be taken into consideration for churches,—it could hardly have been otherwise at that period,—but it contains a great deal of excellent criticism and suggestion, which might be applicable to church building independently of style.

Personally, Mr. Beresford Hope was a man with many friends; possibly he had some enemies, as no one is without; but we cannot say we ever heard of them. He was a genial, courteous, kindly man, with a kindly manner. In public speaking, of which he did a good deal in his lifetime, his manner was what might be called a little pompous, only that the word rather implies something sour and ill-tempered, which he certainly was not; and he generally managed to make some good hit in his speeches, whether on architecture or any other subject, and enjoyed his joke quite as much as his audience did; and if his friends smiled at his little peculiarities of this kind, they did not like him the less. He was, to sum up, a typical and withal very favourable example of the wealthy amateur and patron of art, with much more knowledge of one branch of art, at all events, than wealthy patrons usually possess; one who used his wealth in this direction both with judgment and liberality, and did his best to encourage what he believed to be the best.

In the *Builder* for March 12, 1870, we gave a portrait of Mr. Hope, which is a very good likeness of him as he then was.

The funeral at Kilndown, on Wednesday, was attended by a great number of relatives and friends of the deceased, and the coffin was almost hidden from view beneath the offerings of wreaths and flowers heaped upon it. The monumental tomb in Kilndown Churchyard was erected some years ago, from the designs of Messrs. Carpenter & Ingelow, at the time of Lady Mildred Hope's death. It is a monument of some elaboration, in the Gothic style which Mr. Hope so loved, and an illustration of it will be found in the *Builder* of May 6, 1882.

BRITISH MUSEUM.

ROOM OF GREEK AND ROMAN SCULPTURE IN RELIEF.

WE have already (p. 523) called attention to the new room in which some of the Greek and Roman reliefs so long buried in the dark basements have now been restored to exhibition and a certain amount of daylight. It would be premature at present to criticise the arrangement of these sculptures, as the deficiencies under which they are now seen are due to temporary circumstances for which the niggardliness of the Treasury is responsible, and which, it is to be hoped, may soon be remedied.

These sculptures, it will be remembered, are mainly sepulchral reliefs of Greek and Roman workmanship, dating roughly from about the fourth century B.C. down to the third century A.D.; many of them came to the Museum with the Townley Collection, others from the Earl of Aberdeen, Lord Elgin, Lord Stratford de Redcliffe, and Colonel Leake. In 1852 they were crowded out for want of space and withdrawn from exhibition, and from that period till now their place has known them no more. They have practically ceased to exist for the general public, except in Corbould's fine drawings in the "Museum Marbles."

About eighteen months ago the removal of the Department of Prints to new buildings left a room vacant, and amongst the many clamorous applications for this vacant space it was considered that the "buried sculptures," with their record of thirty-five years in disgrace, had a prior claim. This room had been used as a study by the previous occupants, and obviously a good deal of alteration was necessary in order to prepare it for the new tenants. When, however, the question came forward of granting the funds for this purpose, the Treasury absolutely declined; thirty-five years were in their sight but as yesterday, and their Lordships were of opinion that the alteration proposed was not of urgent necessity and should be postponed for the present. The sum set apart for this purpose out of Museum funds reverted to the Exchequer as savings. Fortunately, in England it sometimes happens that when public spirit fails private munificence comes to the rescue. A small balance remaining from the White bequest has been available for the little that was required to render the room at least presentable. But the whole story is an interesting evidence of British bureaucracy.

If funds should ever be forthcoming, the room will assume a very different aspect. The sculptures now fixed in the walls will remain, but the windows in the west wall will be built up, and large skylights will take their place. By this means the whole space of an additional wall will be gained, and the present unsuitable side light will be done away with. The present wooden floor will be removed entirely, and a stronger one built on the level of the Elgin Room; and as a small flight of steps will lead from the Mausoleum Room passage direct into the reconstructed room, the whole floor space will in future be available for exhibition of sculptures. The floor space thus provided will be occupied with the fine series of large sarcophagi, with subjects in relief, which are still waiting in the basement; round the walls will be placed the sculptures in low relief, which are now temporarily ranged in rows across the room; while the sculptures in high relief, built in the wall, will be seen at a more convenient height than they are from the present floor. Furthermore, the new level of the floor will allow for a basement, corresponding in height to that of the present Græco-Roman basement, which will admit of the exhibition of those objects for which there is no space above; for it must not be supposed that one, or even two, new rooms would exhaust the wealth which the cellars are ready to disgorge. Besides the large sarcophagi, already mentioned, there are a host of sculptures still awaiting release; upwards of forty more reliefs, a set of casts illustrating the development of the Akroterion on Athenian stelæ; a large series of capitals and other members architecturally most interesting; and a complete columbarium, fitted up with all the various forms of marble sepulchral urn in use in Roman times, some of which are of extremely beautiful work in alabaster.

To turn from what is still unseen to that which is visible, it must be confessed that at present the first sight of the new room will appear somewhat bewildering, especially to those who have not even by lantern-light seen these treasures during their incarceration. Until the room is finally arranged, it is only possible here briefly to point out some of the leading features of interest.

In the collection now on view, we have represented all the different forms of Greek and Roman sepulchral monument. The earliest type of tomb found in Greece is probably the so-called "cupola" grave, which consisted of a subterranean domed chamber, covered with a heap of earth, χῶμα. After the cupola form had disappeared the χῶμα was sometimes raised to an enormous size, as we know from a law of Solon restricting a work of this kind to the labour of five men for five days. Gradually this gave way to the simple grave, marked by a slender shaft, on which a more or less elaborate design came to be either carved or painted. We know that both forms of burial existed in the time of Plato, who distinguishes between the χῶμα and λίθινα ἱστήματα. The Egyptians, on the other hand, from the earliest times, buried their dead in a wooden sarcophagus, the sides of which were painted with subjects and inscriptions; and probably about the time when the Greek traders were imitating Egyptian wares at Naukratis on the Delta, this custom was conveyed to Greece. In the First Vase Room is a terra-cotta sarcophagus, painted with Greek designs of the sixth century, from Rhodes. A further stage is represented by the beautiful sarcophagus at Florence (*Hellenic Journal*, vol. iv., p. 354, pll. xxxvi–viii.), painted with a battle of Greeks and Amazons, of about the beginning of the third century B.C., and the analogous example found at Kertch. But beyond a few isolated instances, which, however, are sufficient to show us the continuous stages of evolution, the Greeks do not seem to have much affected the decorated sarcophagus. How prevalent it was among the Romans we may judge from the large series of small chests arranged on the southernmost shelf across the new room. The lid of the Egyptian prototype took a form which was intended to represent the likeness of the deceased: and so it follows that in Etruscan, and often in Roman imitations, the marble figure of the dead person reclines on the cover, while the paint-

ings on the sides are here replaced by sculpture in relief. Sometimes the sarcophagus was taken to represent, in miniature, the actual house, and the lid is then carved in imitation of a tiled roof, with the edge finished off as imbrices; one example here exhibited has the front carved in the form of the façade of a Roman house, with columns and pilasters, and four doorways. In the same row are two reliefs of special interest: the one represents two gladiators in combat, inscribed with the names probably of the schools,—*familiæ*,—to which they belonged, with the single word ἀπελύθησαν, signifying that Death had presented them with the foil of dismissal; on the other is the very rare representation of a skeleton, with a somewhat cynical reference to Death the leveller, "When only this is left, who is to tell whether I have been a Hylas or a Therseites?"

In the next row (No. 2 from the south side) is a set of banquet scenes, which furnish a rich illustration of the Greek ideas of a future state dealt with in our previous article (p. 383). One of these, marking probably the tomb of some bold sea captain, has in low relief beside his inscription the effigy of the galley in which he served.

In the third row are principally low reliefs of a better period, where the figures are freer and the composition, as a rule, quite simple; graceful figures of ladies at their toilet, or in their earthly home, friends meeting or parting with a friendly grasp of the hand: here is Athene, personifying perhaps the Athenian demos, crowning the citizen who has deserved well of her. One very fine relief from Athens commemorates three ladies of Sestos who died far from their native town; on another, which marked the tomb of fallen warriors, a female figure pours wine for a snake who twines around the trophy which they, perhaps, had helped to win, while a mourning comrade stands beside his horse looking on. The snake is frequently employed, specially in early art, as the symbolic watchfulness which guards the tomb, perhaps also not without some reference to its Chthonian character. A similar relief in the Louvre is explained as the thanksgiving sacrifice of a general for a victory. In that instance, the snake is probably the attribute of Athene Polias.

The next row (No. 4) contains a beautiful series of stelæ illustrating the slender shafts of the best period, crowned with the graceful akroterion in the form of a palmette: it is instructive to note how the ornament, beginning as the simple finish to the angle of the pediment, grows into the main feature of the monument, covering, as it were, with its luxuriant beauty the shaft which gave it birth. One stele in this row deserves special attention; the main relief is in the form of the special funeral amphora, on which are carved the figures of two warriors, Archiades and Polemonikos. This amphora is supported by a sphinx, who faces the spectator, but whose body, on an heraldic principle common in early art, but very rare in this good period, is flattened out as it were on both sides of the head. This stele formerly belonged to Lord Guilford, owner of the famous Corinthian puteal, which has long since disappeared. The stele was obtained at a London sale by Mr. George Plucknett, who recently presented it to the Museum. May we not hope that its long-lost companion, the puteal, which must be somewhere in England, may also one day find its way here?

The vase which is depicted on the Guilford stele has a peculiar significance in connexion with many other marble vases here exhibited. From the earliest times vases are an indispensable accompaniment of Greek funeral rites; they were employed for the funeral ceremonies, for furnishing the tomb, and sometimes for holding the ashes of the dead. Made of earth, they represented, perhaps, indistinctly the element into which human life must resolve itself: an epitaph of Zonas in the Anthol. Pal., xi., 43, says,—

> Δός μοι τοὺκ γαίης πεπονημένον ἀζὺ κύπελλον
> ἄς γενόμην, καὶ ὑφ' ἃ κείσομ' ἀποφθίμενος.

And so it came that a special fabric grew up intended solely for this purpose, and the beautiful series of polychrome lekythi of the fourth century show us the shape most in vogue: probably from this period date the large marble lekythi here exhibited, in which the vase takes the place of the stele, and the painted scenes are replaced by an inscription on sculpture. In another passage of the Anthology, Erinna says,—

> "My funeral shaft, and marble shapes that dwell
> Beside it, and sad urn, receptacle
> Of all I am, salute who seek my tomb,
> If from my own, or other cities come."
> (Garnett's translation.)

Of course, the form of the vase, imitated from terra cotta into marble, undergoes in the new material certain modifications. As a direct development of the idea, we have in Roman times the marble and alabaster actually intended for the ashes, to be placed in columbaria.

On the north wall of the room are fixed some of the most beautiful of the later reliefs; on one of these, on the left, is a pastoral scene, with a pair of goats butting, bulls, and cows; at each end is a shepherd with his dog, the one asleep in the noonday heat, while his companion breathes upon his pipes; the whole is an idyll instinct with the spirit of Theokritus. On the right is a charming decorative design of a frieze of Amazons half reclining, each holding up her crescent shield. In the centre is the head of a sleeping baby, which looks as if it had come direct from a canvas of Raffaelle. On the same wall is a curious late design of the carceres of the circus, out of which issue two Erotes driving chariots, to which are harnessed pairs of greyhounds, a scene which one would expect on late Roman gems, and which is probably of the same period as the gems of this class.

On the south wall are two long slabs sculptured with similar subjects, but which show interesting differences of treatment. The one on the right has the Nine Muses, each with a feather in her hair, plucked from the vanquished sirens, and with her distinguishing attribute: in the centre are Apollo striking the lyre, and Athene. It is curious to note that the lyre of Apollo and one Muse rests on a column, as if these reliefs had been copied from statues in the round. A similar group occurs on a sarcophagus in Berlin representing the contest of Apollo and Marsyas. In the group on the left the Nine Muses meet us again, but here they are divided off into pairs, each pair standing within a richly-sculptured niche between two columns: the treatment of this composition is strikingly like some of the early ecclesiastical sculpture of the Renaissance: a likeness which is further suggested by the style of another group on the same wall; it is a very late relief, representing boys at play, which, an inscription informs us, was dedicated by a father to his son, "Filio super omni caritate dulcissimo." The wealth of new material here offered for the study of Greek and Roman sculpture and thought in their latest phase will probably prove the most attractive feature of the new room; the interest of these sculptures will have a special claim on all students of Mediæval art.

NOTES.

IN spite of the long and elaborate evidence given by Mr. Walker at the inquest in connexion with the fire at Whiteley's (printed in another column), we are not inclined to accept the theory that the wall was pushed out by the expansion of the girders. Theoretically, no doubt, a length of butted girders such as existed there would expand to the extent of 6 in. or 8 in., if the fire had no action upon the iron except in the direction of its length, but the probability is that before that degree of expansion in length was reached, the iron would have buckled and twisted so much in various directions that the expansion in length would be nullified, or the actual result might even be a contraction so far as the action of the beams on the walls was concerned. The conclusion arrived at by Mr. Walker is perfectly logical if the iron did exactly what it is assumed it would do; but the fact is, no one can say what iron will do in a fire. Our opinion is that the wall fell from the action of heat upon it, assisted by the disturbing action of the girders under the influence of heat; but we do not think there is anything to prove that this disturbing action was a pushing-out one arising from direct expansion of the iron-work; and it may just as likely have been a dragging weight and leverage exerted by iron which had twisted and lost its bearing power, and was hanging and dragging on the walls. Of course the iron does expand with the heat of a fire, but it may and probably will have become distorted in so many other ways by the time it comes to that point, that it cannot be regarded as a matter of simple linear expansion in length. The real moral is,—protect your iron with a heat-resisting coating, which will give time to put the fire out before the iron can feel it to any serious extent.

LORD RANDOLPH CHURCHILL has been enlightening the public on art at the Science and Art Schools at Newcastle. Lord Randolph seems to have had a misgiving that he was not much of an authority on such subjects, and in regard to the arts of painting, sculpture, and music he confined himself to the comfortable generalisation that these three arts "are holding their own not only amongst certain classes of this country, but over the whole mass of the population of this country." What Lord Randolph means by that he best knows. Probably it was intended as the kind of pleasant generality which would draw applause and might mean anything or nothing. But there is another art about which Lord Randolph is compelled to speak more plainly, that of architecture. He does not find it progressing. He was recently appointed (as, indeed, we observed with some amusement) on a Special Committee on the War Office sites question, and is therefore, no doubt, constituted *ipso facto* an authority on architecture. The War Office designs were all very bad, Lord Randolph thinks, and so English architecture is in a bad way. Now, as a matter of fact, one of the designs was much better than Lord Randolph knows of; but the generally unsatisfactory character of the selected designs was due in great measure first to the fact that the Government conditions were such that many of the first architects of the day would have nothing to do with the competition, and secondly to the fact that one meddling and pragmatical amateur on the first committee of selection managed the rejection of some much better designs because they did not agree with his preconceived notions. The Law Courts is a failure, no doubt; not, however, because it is Gothic, but because it is badly planned, and in this case again the failure is due to the fact that the authorities weakly allowed the best plan, which they had premiated as such, to be pushed on one side. The most audacious statement of this amateur exponent of architecture is that there is no trace of architectural excellence in the residential architecture of to-day. It is a fact that there are a larger number of picturesque houses, houses in which artistic effect, externally and internally, is carefully studied, being built during the present generation than for many generations previous; and it may be useful to Lord Randolph (or, at any rate, to those who listened to his clap-trap) to know that one of the most gifted of the younger architects of France, M. Paul Sédille, in some recent articles on English architecture contributed to a French periodical, has expressed his special admiration of the English Domestic architecture in the warmest terms; and Frenchmen are not by any means given to praising English art. But then M. Sédille knows something about architectural design and Lord Randolph knows nothing, and that makes all the difference.

THE *Transactions* of the Institute of Architects become more and more interesting and valuable in regard to their illustrative contents. The third volume of the New Series, which is just in the hands of members, is full of architectural illustrations, many of them of great beauty and interest The Institute

acted well in giving a large series of Mr. A. B. Mitchell's drawings as Soane Medallist: these are admirable in their combination of freedom of effect with architectural accuracy, and are beautifully reproduced by the phototype process. Mr. Bidlake's drawings as Pugin Travelling Student include very careful measured illustrations of the north porch at Spalding Church; and two pencil drawings by Mr. Oakeshott (Aldwinckle Student), are also given. There is a whole series of illustrations to Mr. Brindley's paper on the use of marble, showing a number of examples of the decorative use of this material. Mr. T. G. Jackson's drawing of the remarkable doorway at Traü is also reproduced as a double-page plate by the phototype process. There are a considerable number of illustrations of Japanese domestic architecture appended to Mr. Conder's paper on that subject, including some reproductions from photographs of interiors by the phototype process. Some sketches in Shropshire and Worcestershire, by Mr. H. D. Walton, are also of considerable interest, and very well executed. In fact, from being what it once was, a mere collection of papers, the *Transactions* of the Institute of Architects has become a volume of things full of artistic beauty and interest, and we heartily congratulate the Institute on their new volume, and hope it may have many equally worthy successors. Among special points in the literary portion of the present volume may be mentioned the reprint of Mr. Wyatt Papworth's paper on "English Buildings in the Middle Ages," which contains a great deal of curious information on prices and the mode of conducting building operations at that period, and in a historical point of view is of permanent value.

CONSIDERABLE interest is being taken in this country in a railway case now proceeding in America involving the question of "undue preference." The suit is against the Cincinnati and New Orleans and the Texas Pacific lines for "discriminating" in freight rates in favour of the Standard Oil Company. This latter concern is a tremendous monopoly, and has been able to apply such pressure to the Railway Companies as to compel them to refuse to convey the oil of its competitors. Whatever may be said as to the adequacy of our laws relating to railways, those relating to undue preference are clear enough to make it impossible for such arbitrary proceedings to be taken with us, and the injustice involved in the case in question is so glaring that it is probable that Mr. Rice, the complainant, will win his suit. He claims that the offending companies should forfeit their charters, — a very heavy penalty, — for their abuse of privilege, so that a verdict in his favour would place them in a most peculiar position. Some years ago a verdict was given against another railway company for "discriminating" in favour of the very same concern, and the present complainant appears to have been far more hardly used than were the firm (Messrs. Scofield & Co.) who instituted the proceedings alluded to. That case was fully argued at Cleveland before a jury composed of men selected especially for the case, and, although the damages awarded were considerably below the amount claimed, the principle of the right of the State to interfere in such matters was clearly affirmed.

A MOTIONLESS GRINDER at first sight seems an impossibility, but nevertheless such an instrument has been produced. When, however, we learn that the motion is contained in the particles to be operated on themselves, the mystery is explained. The pneumatic pulveriser, now being introduced by the British Pneumatic Pulveriser Co., works on this principle. The material to be operated upon is fed into a couple of receptacles or hoppers placed side by side a short distance apart. Close to the bottom of each of the hoppers there is a small pipe-like opening, the mouths of these openings pointing towards each other. A jet of superheated steam or compressed air is introduced into each opening, and in this way the particles of the material to be pulverised are thrown violently against each other, and the result is a powder of any required degree of fineness ranging between a coarse sand and an impalpable powder. The company have issued an ecstatic circular as full of italics and superlatives as a young lady's letter, in which they set forth the virtues of the apparatus. From this we learn that some of the most difficult substances, such as chrome iron ore, quartz, corundum, cast-iron chips and turnings, granite, French chalk, soap-stone, &c., have been successfully treated. The possibility of an improved grinder for cement-making is a point that more nearly interests us, and we are pleased to learn that the pneumatic pulveriser has been used for this purpose with most gratifying results. When used for reducing clinker cement to powder, a fineness corresponding to a mesh of 200 holes to the inch has been readily obtained. "Diamond cut diamond" has always been recognised as the leading canon of pulverisation, and the apparatus in question appears admirably adapted for extending the principle.

THE relation between science and nature has received a fresh exemplification in the newly-discovered connexion between agriculture and the iron trade. Everybody nowadays has heard of the Thomas & Gilchrist process, by which the phosphorus, which is so bad for steel-making purposes, is eliminated cheaply and quickly from the iron, where it is often very abundant. The resulting rubbish is known as "slag," which hitherto was deemed waste material and which contains an immense deal of phosphoric lime. Any stray iron in it is first separated, and the slag, which in the early days of the iron trade grew into perfect mountains of hideous blackness around the site of the works, is ground into a fine powder, when it forms an admirable fertiliser, far exceeding the capabilities of guano, coprolite, or bonedust. The quality of the powder depends on the fineness of the grinding; it contains as much phosphoric acid as superphosphate, while the price is only one third.

DR. DÜMMLER, in a recent paper, tries to rescue from the reproach of being "Etruscan" a small but important class of Greek vases which have not hitherto received the attention they deserve. As six out of the twenty specimens he enumerates belong to the British Museum, his theory will be weighed with interest in England. All of the vases that we have seen (the five at Würzburg we take on trust from Dr. Dümmler's account) certainly bear an unmistakable stamp of identity of *fabrique*. They also have a puzzling barbaric air, which, of course, is the reason that they have so long been shelved as Etruscan. Dr. Dümmler thinks they are Greek work under the influence of Scythian surroundings; in fact, that they were made at some colony in the Pontus, exported probably to Corinth, thence re-exported to Italy. He bases this opinion, which he frankly acknowledges is only opinion, on one of the series, an amphora in the Museo Gregoriano at Rome, on the shoulder-piece of which a combat is depicted in thoroughly Scythian fashion; three horsemen in peaked Scythian caps turn round in rapid flight to shoot at their pursuers. Herodotus (vii. 64) describes the Scythians as wearing sharp-pointed caps, to which he gives the Eastern name "kurbasia." Their custom of fighting in feigned retreat was well known, not only Herodotus but Plato refers to it, in the Laches; he uses the Scythians as stock example of men who fight flying as well as pursuing (ὥσπερ που καὶ Σκύθαι λέγονται οὐχ ἧττον φεύγοντες ἢ διώκοντες μάχεσθαι). Dr. Dümmler rightly says that a number of questions must await the complete and accurate publication of the whole series. He gives five instances in plates viii. and ix. of the last issue of the *Bulletino* of the German Institute in which his paper appears.

IN the same number (II. Heft., 3, 1887) Dr. Hartwig gives two autotype plates of a head of Parian marble, in the possession of Mr. E. Haug, once American Consul at Rome. The head is in itself of fine work and considerable interest, but Dr. Hartwig's paper seems to us little more than a string of precarious conjectures. From some marks in the head it is conjectured that it was provided with a coronal of rays, and hence was intended to represent the sun-god Helios. It is compared with a rayed terra-cotta head, also in the possession of Mr. E. Haug, and with the well-known coins of Rhodes with the Helios type. The marble head seems to have been attached to a body, and, from the turn of the neck, it is possible that the complete statue stood in a quadriga. From this it is, of course, only a step to think of the Helios, by Lysippos, the work for which the artist was most highly celebrated in antiquity. In fact, Dr. Hartwig thinks that we have here a marble copy of early date of the original bronze. We feel inclined to say with the Scotchman: "Mebbe yes, and mebbe na."

THE last vacant site in Chambers-street, Edinburgh, has been disposed of by the Improvement Trust. By an arrangement between the trustees and the gentleman to whom the site has been disposed of, a memorial tablet is to be placed in the building which is in course of erection, bearing the inscription:—"Near this spot stood the house in which Sir Walter Scott was born, August 15, 1771. Erected by the Magistrates and Town Council. Sir Thomas Clark, Lord Provost; James Lessels, Architect."

THE President of the Royal Scottish Academy, Sir William Fettes Douglas, has represented to the Merchant Company of Edinburgh that it would be a graceful act were the Company to provide a statue of Adam Smith, to be erected in the new National Portrait Gallery now approaching completion. This appeal has been unavailing, as it appears the Company are fettered by their rules as to the disposal of the funds under their management. An effort is, however, being made to procure the money required for the statue by public subscription.

THE *Indian Engineer* of October 1st contains an interesting account, with illustrations, of the process of "launching" the Torkham Bridge girders over the Meheob river. The river is in a deep ravine, and subject to sudden and violent floods, so that building the girders below and hoisting them vertically was out of the question, and they were built on the cliff side and hoisted or landed forward into position by the aid of a steel rope stretched across the ravine, the trailing end of the girder being taken by a roller working on rolled beams laid as rails. The details of the attachment and method of working are given in the diagrams.

THE collection of drawings by the members of the Dutch Watercolour Society now on view at the Goupil Gallery in New Bond-street includes some fine things, but also shows that the Society is entirely devoted to a mannerism of the "blottesque" type. There can hardly be said to be a finished drawing in the room, though there are some very fine and powerful sketches of landscape, nearly all of a murky and desolate type, melancholy having apparently marked the modern Dutch School for its own. Among the best of these cold pastorals are Bakhuyzen's "Spring Evening" (22), Du Chattel's "Winter" (30), and Bastert's "Winter Evening" (39), Bakhuyzen's "Wood, Winter" (60), and Poggenbeck's "Winter's Evening" (95). Mauve's "Across the Village" (95), with a back view of a flock of sheep, shows a remarkable power of indicating forms of animals in the middle distance without giving a single detail,—a power which means, of course, very careful study, though it looks careless; but the same artist's "Return of the Flock" (56), where the sheep come up nearer to the foreground, might be entitled "Return of the Smudges," and shows a tone and colour in landscape which we are thankful to think exists nowhere on this earth. In Gabriel's "Landscape" (2) it is impossible to make out whether the middle portion represents a river or a wet road after rain; after

trying some time we gave it up. Among the architectural subjects are two large interiors by Bosboom (11, 18), executed on a thin paper, which is pasted on a mount so as to leave ridges and wrinkles over the surface; as this occurs in both drawings, it is evidently by design, and is about as shallow a piece of trickery as could be. If the painter had given the same trouble to getting his architectural lines perpendicular it would have been better for his work. There are two or three little bits of Israels; among others, one, "Reading the Bible" (102), which is interesting as showing what the artist's style was in his early days; the others appear to be recent works. Van Essen's "Heads of Lion and Lioness" (28) is an admirable piece of animal painting. In another room is to be seen a large "Pastorale" by Henner, a nude figure relieved against a background of sombre trees, under an evening sky, piping to another who listens; the scale is larger than necessary for the subject; it would have done as well or better half the size; but it is a pure poetic fancy expressed in rich colour, which is worth all the dingy achievements of the Dutch water-colour artists.

A COLLECTION of drawings, under the title of "The Sunny South," by Mr. G. Q. B. Talbot, is on view at the gallery of the Fine Art Society. The landscapes show what may be called good painting, but no great force or originality; the artist has been successful, however, in representing a curious and striking effect of "Morning Mist from Moutreux" (39). The drawings dealing with architectural subjects are very good; we may notice particularly the little drawing of "A Marabout's Tomb, Algiers" (31), which is very bright and sparkling in effect. Architectural subjects seem to be Mr. Talbot's best point, though there are but a small proportion of them in the collection.

SIR WILLIAM MUIR, Principal of the Edinburgh University, in his opening address for the winter session, delivered last week, referred to the outward aspect of the University, and to the additional embellishments it had recently received, specialising the dome over the entrance to the quadrangle of the old college buildings. These buildings, he said, had been hopelessly closed in by the noisy bustle of crowded streets, but now the building, as befitted one of the great edifices of their beautiful city, could be discerned from afar. He also alluded to the handsome fountain erected in the quadrangle by Dr. Cumming,—"a touching monument of the affection, —*pietatis haud peritura* of the octogenarian founder toward his *Alma Mater*." He intimated that arrangements were in train for the erection of the academic hall to be attached to the new buildings. He alluded to the progress made in regard to the building for the Students' Union, and to the efforts being made to provide university houses or hotels for the accommodation of the students,—a movement which he wished would meet with every success, and he felt that success was certain if they were carefully planned and arranged, and well regulated.

IT appears that a proposal to build a hotel on Shepperton Eyot, near Shepperton Lock, has excited the reasonable apprehension of the West Surrey Water Company, whose intake is a short distance below the Eyot, and who apprehend that their water supply must inevitably be contaminated by the drainage from the proposed hotel. Their secretary has addressed a letter to the Rural Sanitary Board, pointing out that if such a building were erected "it might become a serious matter to the district supplied by this Company," as it unquestionably might, and probably would. Plans of the hotel would have to be submitted to the Board for approval: so the architect and proprietors of the same would do wisely to consider in the meantime what can be done to provide for the drainage of the hotel otherwise than by sending it into the river. They will probably find it difficulty to get permission to do the latter from any Sanitary Authority properly alive to its responsibilities.

THE special number of the *Art Annual*, forming what used to be called the Christmas number of the *Art Journal*, is already out; we suppose before long Christmas numbers will be published at Midsummer. As before noted, it consists of a sketch of the life and work of Meissonier, by Mr. Lionel Robinson, with a number of illustrations from the painter's works. These include an admirable photogravure of "La Rixe," as a frontispiece, and a very successful engraving by Mr. Carey after "Waiting for an Audience"; there are also engravings of the brothers Van de Velde, and of the celebrated picture of the retreat from Russia. The smaller illustrations go to prove that Meissonier is a very difficult artist to reproduce, and that much of the painter's delicate art evaporates in the process; few of the cuts gave any just idea of the delicacy of the originals. Some reproductions of original studies by Meissonier are of considerable interest, and will be new to most readers. The study of horses on page 24 shows the care which Meissonier gave to the representation of the animal which he has rendered so splendidly in many of his small masterpieces. The view of the painter's house in Paris is a very poor specimen of architectural sketching. Mr. Robinson's biographical essay contains a good deal that is of interest as to the painter's method of working, &c.

HOW many of our readers are aware that there is a journal devoted especially to bookbinding, under the title of *The Bookbinder?* It is published monthly,* and the number dated October 25th contains three interesting illustrations of the bookbinder's craft, one by Dupin (1498), and another of a quarto bound by Francis Bedford, and another of the "Hortus Sanitatis," a book bound at Strasburg in 1536, but in the quasi-Oriental style derived from Venice, the first Paradise of bookbinders. There is something else in *The Bookbinder* which interests us more, however, namely, a suggestion that "finishers" who are readers of the journal should, from time to time, send designs to its Editor worked out in printers' ink on white paper, and that any that seemed worthy of it should be published. That is a direct and practical encouragement to artistic effort on the part of working bookbinders, and we should be interested to see what it results in.

"OLD BRICKS FOR SALE,"—BOW-STREET AND COVENT GARDEN.

THE best known, perhaps, though by no means the most popular house in London, will very soon have been razed to the ground. An important scheme for improvements on the Duke of Bedford's estate, at the north-eastern side of Covent Garden, involves the destruction of the old Bedford Hotel, in the East, or Little, Piazza,—its back premises and the kitchen extending far behind Russell-street; and of the former Bow-street Police-court. This latter is Nos. 4 and 4A, and with it will fall the adjoining premises, Nos. 3 and 5, in that same street. Since the removal of the criminal business to the new Courts on the opposite side of the way these premises have hitherto been occupied by various theatrical agents, hosiers, and costumiers. For the new buildings, erected in 1879,† were demolished all the premises which lay within the area bounded by Broad-court, Cross-court, and Duke's-court, and the last-named alley, a turning out of Bow-street, was abolished.

In Sir Patrick Colquhoun's work‡ we read that a police-court with three magistrates was first established at Bow-street in the year 1749, and that seven other metropolitan courts were subsequently opened in terms of the Statute 32 Geo. III., c. 53. At Bow-street presided the celebrated Sir John Fielding, a descendant of Sir William Fielding, first Earl of Denbigh, and younger half-brother to Henry Fielding, the novelist. Despite the affliction of blindness, Sir John Fielding composed numerous didactic works, amongst them being a description of the cities of London and Westminster, 1776, 12mo. His ability and rectitude elevated the character of the office of a metropolitan Justice, which in those days had sunk to very low repute. Having succeeded to his brother, whose efforts for the Hanoverian cause were, in December, 1748, rewarded by the then paltry place of Acting Justice for Middlesex and Westminster, he removed to Bow-street. His house there, occupying the site under review, was destroyed, with all its contents, by the No Popery rioters on Tuesday, June 6th, 1780. He died at Brompton, four months afterwards, in September of that year. That house, moreover, had another claim to fame, for it was thence, on February 28th, 1749, that Henry Fielding gave forth to the world his labour of some years, "A History of Tom Jones, a Foundling." Its successor, built of red brick, may yet be distinguished by a stuccoed front, rising one story above its neighbours, by the railing before Nos. 3 and 4 and 4A having terminals in shape of Roman fasces whereof all but two of the axes are broken off, and by its high-pitched gable at the rear. The police-court and cells to the south were on the ground-floor at the back, and had a large apartment in the basement. But these features are now in ruins; all movable fittings have been carted away; and an extensive clearance is being made, preparatory, as we gather, to the opening out of a wide thoroughfare from Bow-street in alignment with the Northern or Great Piazza, and King-street beyond. These changes, combined with others of recent date, quite alter the aspect of this familiar street.

At daybreak on the morning of Wednesday, March 5th, 1856, Covent-garden Theatre, which Sir Robert Smirke had rebuilt in 1808-9, was totally consumed by a fire that broke out towards the close of a masquerade ball given by Anderson, the *soi-disant* "Wizard of the North." Of that house the pit and box entrances were in Bow-street. The theatre was reconstructed by the Messrs. Lucas, after the late E. M. Barry's designs, and at a total cost exceeding 70,000*l*. Then followed the ridiculous and for many years useless Floral Hall, which was opened on March 7th, 1860, by a ball to celebrate the constitution of our Volunteer Rifle Corps. For its southern entrance the continuity of Inigo Jones's Piazza was ruthlessly broken, and arches of cast-iron substituted for the arcade. Gye's project for a large central flower-market is at length, however, partially realised, since within the past few weeks the Floral Hall has been adapted for service as a fruit depôt in connexion with the market in Covent-garden.

> "I've had to-day a Dozen Billet Doux
> From Fops and Wits, and Cits, and Bow Street Beaux."

Thus did Mrs. Bracegirdle begin an epilogue, by Dryden, on the boards of Drury-lane. Sir Walter Scott comments on the passage by observing that a billet-doux from Bow-street would now be less flattering than alarming. But in Dryden's time Bow-street was eminently the Bond-street of the town. It was originally laid out in the year 1637, being more curved in shape than it is at present, and terminated towards the upper end, beyond Hart-street, in a *cul-de-sac* that abutted against the back of Long-acre at a spot a few yards east of Phœnix-alley, since Hanover-court, the last home of John Taylor, the Water Poet. Hatton, in his "New View of London" (1708) calls it "a spacious Str. betn. *Russel Str., Covent Garden*, SEly, and near *Long Acre*." Strype, writing in 1730, describes it as being "open and large with very good houses, well inhabited, and resorted unto by gentry for lodgings, as are most of the other houses in this parish" [St. Paul's]. But within four or five years it rapidly declined in favour; a downfall to which the Police-court, with its inevitable surroundings, in all likelihood largely contributed. Amongst its inhabitants during the decadence were Edmund Curll, at No. 1; Spranger Barry, over what is now Mrs. Edwards's ham and beef shop, and was formerly Will's Coffee-house;* and Dr. Johnson, who came hither from the "Black Boy" in the Strand, and quitted his lodgings for others in Holborn. For Rich's theatre was pulled down the house which Dr. Radcliffe had occupied during the interval 1687-1714. It was whilst residing here that he had the famous passage of arms about the garden door with

* William Clowes & Sons.

† For view and plans of the new courts and police offices (Mr. John Taylor, architect) see *Builder* for June 21, 1879.

‡ A Treatise on the Police of the Metropolis, &c. By a Magistrate. Third edition. 1796.

* This shop, with a private door opening out of Bow-street, is now 21, Russell-street. First known as the Red Cow, and then as The Rose.

acted well in giving a large series of Mr. A. B. Mitchell's drawings as Soane Medallist: these are admirable in their combination of freedom of effect with architectural accuracy, and are beautifully reproduced by the phototype process. Mr. Bidlake's drawings as Pugin Travelling Student include very careful measured illustrations of the north porch at Spalding Church; and two pencil drawings by Mr. Oakeshott (Aldwinckle Student), are also given. There is a whole series of illustrations to Mr. Brindley's paper on the use of marble, showing a number of examples of the decorative use of this material. Mr. T. G. Jackson's drawing of the remarkable doorway at Traü is also reproduced as a double-page plate by the phototype process. There are a considerable number of illustrations of Japanese domestic architecture appended to Mr. Conder's paper on that subject, including some reproductions from photographs of interiors by the phototype process. Some sketches in Shropshire and Worcestershire, by Mr. H. D. Walton, are also of considerable interest, and very well executed. In fact, from being what it once was, a mere collection of papers, the *Transactions* of the Institute of Architects has become a volume of things full of artistic beauty and interest, and we heartily congratulate the Institute on their new volume, and hope it may have many equally worthy successors. Among special points in the literary portion of the present volume may be mentioned the reprint of Mr. Wyatt Papworth's paper on "English Buildings in the Middle Ages," which contains a great deal of curious information on prices and the mode of conducting building operations at that period, and in a historical point of view is of permanent value.

CONSIDERABLE interest is being taken in this country in a railway case now proceeding in America involving the question of "undue preference." The suit is against the Cincinnati and New Orleans and the Texas Pacific lines for "discriminating" in freight rates in favour of the Standard Oil Company. This latter concern is a tremendous monopoly, and has been able to apply such pressure to the Railway Companies as to compel them to refuse to convey the oil of its competitors. Whatever may be said as to the adequacy of our laws relating to railways, those relating to undue preference are clear enough to make it impossible for such arbitrary proceedings to be taken with us, and the injustice involved in the case in question is so glaring that it is probable that Mr. Rice, the complainant, will win his suit. He claims that the offending companies should forfeit their charters, — a very heavy penalty, — for their abuse of privilege, so that a verdict in his favour would place them in a most peculiar position. Some years ago a verdict was given against another railway company for "discriminating" in favour of the very same concern, and the present complainant appears to have been far more hardly used than were the firm (Messrs. Scofield & Co.) who instituted the proceedings alluded to. That case was fully argued at Cleveland before a jury composed of men selected especially for the case, and, although the damages awarded were considerably below the amount claimed, the principle of the right of the State to interfere in such matters was clearly affirmed.

A MOTIONLESS GRINDER at first sight seems an impossibility, but nevertheless such an instrument has been produced. When, however, we learn that the motion is contained in the particles to be operated on themselves, the mystery is explained. The pneumatic pulveriser, now being introduced by the British Pneumatic Pulveriser Co., works on this principle. The material to be operated upon is fed into a couple of receptacles or hoppers placed side by side a short distance apart. Close to the bottom of each of the hoppers there is a small pipe-like opening, the mouths of these openings pointing towards each other. A jet of superheated steam or compressed air is introduced into each opening, and in this way the particles of the material to be pulverised are thrown violently against each other, and the result is a powder of any required degree of fineness ranging between a coarse sand and an impalpable powder. The company have issued an ecstatic circular as full of italics and superlatives as a young lady's letter, in which they set forth the virtues of the apparatus. From this we learn that some of the most difficult substances, such as chrome iron ore, quartz, corundum, cast-iron chips and turnings, granite, French chalk, soap-stone, &c., have been successfully treated. The possibility of an improved grinder for cement-making is a point that more nearly interests us, and we are pleased to learn that the pneumatic pulveriser has been used for this purpose with most gratifying results. When used for reducing clinker cement to powder, a fineness corresponding to a mesh of 200 holes to the inch has been readily obtained. "Diamond cut diamond" has always been recognised as the leading canon of pulverisation, and the apparatus in question appears admirably adapted for extending the principle.

THE relation between science and nature has received a fresh exemplification in the newly-discovered connexion between agriculture and the iron trade. Everybody nowadays has heard of the Thomas & Gilchrist process, by which the phosphorus, which is so bad for steel-making purposes, is eliminated cheaply and quickly from the iron, where it is often very abundant. The resulting rubbish is known as "slag," which hitherto was deemed waste material and which contains an immense deal of phosphoric lime. Any stray iron in it is first separated, and the slag, which in the early days of the iron trade grew into perfect mountains of hideous blackness around the site of the works, is ground into a fine powder, when it forms an admirable fertiliser, far exceeding the capabilities of guano, coprolite, or bonedust. The quality of the powder depends on the fineness of the grinding; it contains as much phosphoric acid as superphosphate, while the price is only one third.

DR. DÜMMLER, in a recent paper, tries to rescue from the reproach of being "Etruscan" a small but important class of Greek vases which have not hitherto received the attention they deserve. As six out of the twenty specimens he enumerates belong to the British Museum, his theory will be weighed with interest in England. All of the vases that we have seen (the five at Würzburg we take on trust from Dr. Dümmler's account) certainly bear an unmistakable stamp of identity of *fabrique*. They also have a puzzling barbaric air, which, of course, is the reason that they have so long been shelved as Etruscan. Dr. Dümmler thinks they are Greek work under the influence of Scythian surroundings; in fact, that they were made at some colony in the Pontus, exported probably to Corinth, thence re-exported to Italy. He bases this opinion, which he frankly acknowledges is only opinion, on one of the series, an amphora in the Museo Gregoriano at Rome, on the shoulder-piece of which a combat is depicted in thoroughly Scythian fashion; three horsemen in peaked Scythian caps turn round in rapid flight to shoot at their pursuers. Herodotus (vii. 64) describes the Scythians as wearing sharp-pointed caps, to which he gives the Eastern name "kurbasia." Their custom of fighting in feigned retreat was well known, not only Heredotus but Plato refers to it, in the *Laches*; he uses the Scythians as stock example of men who fight flying as well as pursuing (*ὥσπερ που καὶ Σκύθαι λέγονται οὐχ ἧττον φεύγοντες ἢ διώκοντες μάχεσθαι*). Dr. Dümmler rightly says that a number of questions must await the complete and accurate publication of the whole series. He gives five instances in plates viii. and ix. of the last issue of the *Bulletino* of the German Institute in which his paper appears.

IN the same number (II. Heft., 3, 1887) Dr. L. Hartwig gives two autotype plates of a head of Parian marble, in the possession of Mr. E. Haug, once American Consul at Rome. The head is in itself of fine work and considerable interest, but Dr. Hartwig's paper seems to us little more than a string of precarious conjectures. From some marks in the head it is conjectured that it was provided with a coronal of rays, and hence was intended to represent the sun-god Helios. It is compared with a rayed terra-cotta head, also in the possession of Mr. E. Haug, and with the well-known coins of Rhodes with the Helios type. The marble head seems to have been attached to a body, and, from the turn of the neck, it is possible that the complete statue stood in a quadriga. From this it is, of course, only a step to think of the Helios, by Lysippos, the work for which the artist was most highly celebrated in antiquity. In fact, Dr. Hartwig thinks that we have here a marble copy of early date of the original bronze. We feel inclined to say with the Scotchman: "Mebbe yes, and mebbe na."

THE last vacant site in Chambers-street, Edinburgh, has been disposed of by the Improvement Trust. By an arrangement between the trustees and the gentleman to whom the site has been disposed of, a memorial tablet is to be placed in the building which is in course of erection, bearing the inscription:—"Near this spot stood the house in which Sir Walter Scott was born, August 15, 1771. Erected by the Magistrates and Town Council. Sir Thomas Clark, Lord Provost; James Lessels, Architect."

THE President of the Royal Scottish Academy, Sir William Fettes Douglas, has represented to the Merchant Company of Edinburgh that it would be a graceful act were the Company to provide a statue of Adam Smith, to be erected in the new National Portrait Gallery now approaching completion. This appeal has been unavailing, as it appears the Company are fettered by their rules as to the disposal of the funds under their management. An effort is, however, being made to procure the money required for the statue by public subscription.

THE *Indian Engineer* of October 1st contains an interesting account, with illustrations, of the process of "launching" the Torkham Bridge girders over the Meheob river. The river is in a deep ravine, and subject to sudden and violent floods, so that building the girders below and hoisting them vertically was out of the question, and they were built on the cliff side and hoisted or landed forward into position by the aid of a steel rope stretched across the ravine, the trailing end of the girder being taken by a roller working on rolled beams laid as rails. The details of the attachment and method of working are given in the diagrams.

THE collection of drawings by the members of the Dutch Watercolour Society now on view at the Goupil Gallery in New Bond-street includes some fine things, but also shows that the Society is entirely devoted to a mannerism of the "blottesque" type. There can hardly be said to be a finished drawing in the room, though there are some very fine and powerful sketches of landscape, nearly all of a murky and desolate type, melancholy having apparently marked the modern Dutch School for its own. Among the best of these cold pastorals are Bakhuyzen's "Spring Evening" (22), Du Chattel's "Winter" (30), and Bastert's "Winter Evening" (39), Bakhuyzen's "Wood, Winter" (60), and Poggenbeck's "Winter's Evening" (95). Mauve's "Across the Village" (95), with a back view of a flock of sheep, shows a remarkable power of indicating forms of animals in the middle distance without giving a single detail,—a power which means, of course, very careful study, though it looks careless; but the same artist's "Return of the Flock" (56), where the sheep come up nearer to the foreground, might be entitled "Return of the Smudges," and shows a tone and colour in landscape which we are thankful to think exists nowhere on this earth. In Gabriel's "Landscape" (2) it is impossible to make out whether the middle portion represents a river or a wet road after rain; after

trying some time we gave it up. Among the architectural subjects are two large interiors by Bosboom (11, 18), executed on a thin paper, which is pasted on a mount so as to leave ridges and wrinkles over the surface; as this occurs in both drawings, it is evidently by design, and is about as shallow a piece of trickery as could be. If the painter had given the same trouble to getting his architectural lines perpendicular it would have been better for his work. There are two or three little bits of Israels; among others, one, "Reading the Bible" (102), which is interesting as showing what the artist's style was in his early days; the others appear to be recent works. Van Essen's "Heads of Lion and Lioness" (28) is an admirable piece of animal painting. In another room is to be seen a large "Pastorale" by Henner, a nude figure relieved against a background of sombre trees, under an evening sky, piping to another who listens; the scale is larger than necessary for the subject; it would have done as well or better half the size; but it is a pure poetic fancy expressed in rich colour, which is worth all the dingy achievements of the Dutch water-colour artists.

A COLLECTION of drawings, under the title of "The Sunny South," by Mr. G. Q. B. Talbot, is on view at the gallery of the Fine Art Society. The landscapes show what may be called good painting, but no great force or originality; the artist has been successful, however, in representing a curious and striking effect of "Morning Mist from Montreux" (39). The drawings dealing with architectural subjects are very good; we may notice particularly the little drawing of "A Marabout's Tomb, Algiers" (31), which is very bright and sparkling in effect. Architectural subjects seem to be Mr. Talbot's best point, though there are but a small proportion of them in the collection.

SIR WILLIAM MUIR, Principal of the Edinburgh University, in his opening address for the winter session, delivered last week, referred to the outward aspect of the University, and to the additional embellishments it had recently received, specialising the dome over the entrance to the quadrangle of the old college buildings. These buildings, he said, had been hopelessly closed in by the noisy bustle of crowded streets, but now the building, as befitted one of the great edifices of their beautiful city, could be discerned from afar. He also alluded to the handsome fountain erected in the quadrangle by Dr. Cumming,—"a touching monument of the affection, —*pietatis haud perituræ* of the octogenarian founder toward his *Alma Mater*." He intimated that arrangements were in train for the erection of the academic hall to be attached to the new buildings. He alluded to the progress made in regard to the building for the Students' Union, and to the efforts being made to provide university houses or hotels for the accommodation of the students,—a movement which he wished would meet with every success, and he felt that success was certain if they were carefully planned and arranged, and well regulated.

IT appears that a proposal to build a hotel on Shepperton Eyot, near Shepperton Lock, has excited the reasonable apprehension of the West Surrey Water Company, whose intake is a short distance below the Eyot, and who apprehend that their water supply must inevitably be contaminated by the drainage from the proposed hotel. Their secretary has addressed a letter to the Rural Sanitary Board, pointing out that if such a building were erected "it might become a serious matter to the district supplied by this Company," as it unquestionably might, and probably would. Plans of the hotel would have to be submitted to the Board for approval: so the architect and proprietors of the same would do wisely to consider in the meantime what can be done to provide for the drainage of the hotel otherwise than by sending it into the river. They will probably find it difficulty to get permission to do the latter from any Sanitary Authority properly alive to its responsibilities.

THE special number of the *Art Annual*, forming what used to be called the Christmas number of the *Art Journal*, is already out; we suppose before long Christmas numbers will be published at Midsummer. As before noted, it consists of a sketch of the life and work of Meissonier, by Mr. Lionel Robinson, with a number of illustrations from the painter's works. These include an admirable photogravure of "La Rixe," as a frontispiece, and a very successful engraving by Mr. Carey after "Waiting for an Audience"; there are also engravings of the brothers Van de Velde, and of the celebrated picture of the retreat from Russia. The smaller illustrations go to prove that Meissonier is a very difficult artist to reproduce, and that much of the painter's delicate art evaporates in the process; few of the cuts gave any just idea of the delicacy of the originals. Some reproductions of original studies by Meissonier are of considerable interest, and will be new to most readers. The study of horses on page 24 shows the care which Meissonier gave to the representation of the animal which he has rendered so splendidly in many of his small masterpieces. The view of the painter's house in Paris is a very poor specimen of architectural sketching. Mr. Robinson's biographical essay contains a good deal that is of interest as to the painter's method of working, &c.

HOW many of our readers are aware that there is a journal devoted especially to bookbinding, under the title of *The Bookbinder?* It is published monthly,* and the number dated October 25th contains three interesting illustrations of the bookbinder's craft, one by Dupin (1498), and another of a quarto bound by Francis Bedford, and another of the "Hortus Sanitatis," a book bound at Strasburg in 1536, but in the quasi-Oriental style derived from Venice, the first Paradise of bookbinders. There is something else in *The Bookbinder* which interests us more, however, namely, a suggestion that "finishers" who are readers of the journal should, from time to time, send designs to its Editor worked out in printers' ink on white paper, and that any that seemed worthy of it should be published. That is a direct and practical encouragement to artistic effort on the part of working bookbinders, and we should be interested to see what it results in.

* William Clowes & Sons.

"OLD BRICKS FOR SALE,"—BOW-STREET AND COVENT GARDEN.

THE best known, perhaps, though by no means the most popular house in London, will very soon have been razed to the ground. An important scheme for improvements on the Duke of Bedford's estate, at the north-eastern side of Covent Garden, involves the destruction of the old Bedford Hotel, in the East, or Little, Piazza,—its back premises and the kitchen extending far behind Russell-street; and of the former Bow-street Police-court. This latter is Nos. 4 and 4A, and with it will fall the adjoining premises, Nos. 3 and 5, in that same street. Since the removal of the criminal business to the new Courts on the opposite side of the way these premises have hitherto been occupied by various theatrical agents, hosiers, and costumiers. For the new buildings, erected in 1879,† were demolished all the premises which lay within the area bounded by Broad-court, Cross-court, and Duke's-court, and the last-named alley, a turning out of Bow-street, was abolished.

In Sir Patrick Colquhoun's work‡ we read that a police-court with three magistrates was first established at Bow-street in the year 1749, and that seven other metropolitan courts were subsequently opened in terms of the Statute 32 Geo. III., c. 53. At Bow-street presided the celebrated Sir John Fielding, a descendant of Sir William Fielding, first Earl of Denbigh, and younger half-brother to Henry Fielding, the novelist. Despite the affliction of blindness, Sir John Fielding composed numerous didactic works, amongst them being a description of the cities of London and Westminster, 1776, 12mo. His ability and rectitude elevated the character of the office of a metropolitan Justice, which in those days had sunk to very low repute. Having succeeded to his brother, whose efforts for the Hanoverian cause were, in December, 1748, rewarded by the then paltry place of Acting Justice for Middlesex and Westminster, he removed to Bow-street. His house there, occupying the site under review, was destroyed, with all its contents, by the No Popery rioters on Tuesday, June 6th, 1780. He died at Brompton, four months afterwards, in September of that year. That house, moreover, had another claim to fame, for it was thence, on February 28th, 1749, that Henry Fielding gave forth to the world his labour of some years, "A History of Tom Jones, a Foundling." Its successor, built of red brick, may yet be distinguished by a stuccoed front, rising one story above its neighbours, by the railing before Nos. 3 and 4, and 4A having terminals in shape of Roman fasces whereof all but two of the axes are broken off, and by its high-pitched gable at the rear. The police-court and cells to the south were on the ground-floor at the back, and had a large apartment in the basement. But these features are now in ruins; all movable fittings have been carted away; and an extensive clearance is being made, preparatory, as we gather, to the opening out of a wide thoroughfare from Bow-street in alignment with the Northern or Great Piazza, and King-street beyond. These changes, combined with others of recent date, quite alter the aspect of this familiar street.

† For view and plans of the new courts and police offices (Mr. John Taylor, architect) see *Builder* for June 21, 1879.

‡ A Treatise on the Police of the Metropolis, &c. By a Magistrate. Third edition. 1796.

At daybreak on the morning of Wednesday, March 5th, 1856, Covent-garden Theatre, which Sir Robert Smirke had rebuilt in 1808-9, was totally consumed by a fire that broke out towards the close of a masquerade ball given by Anderson, the *soi-disant* "Wizard of the North." Of that house the pit and box entrances were in Bow-street. The theatre was reconstructed by the Messrs. Lucas, after the late E. M. Barry's designs, and at a total cost exceeding 70,000*l.* Then followed the ridiculous and for many years useless Floral Hall, which was opened on March 7th, 1860, by a ball to celebrate the constitution of our Volunteer Rifle Corps. For its southern entrance the continuity of Inigo Jones's Piazza was ruthlessly broken, and arches of cast-iron substituted for the arcade. Gye's project for a large central flower-market is at length, however, partially realised, since within the past few weeks the Floral Hall has been adapted for service as a fruit depôt in connexion with the market in Covent-garden.

"I've had to-day a Dozen Billet Doux
From Fops and Wits, and Cits, and Bow Street Beaux."

Thus did Mrs. Bracegirdle begin an epilogue, by Dryden, on the boards of Drury-lane. Sir Walter Scott comments on the passage by observing that a billet-doux from Bow-street would now be less flattering than alarming. But in Dryden's time Bow-street was eminently the Bond-street of the town. It was originally laid out in the year 1637, being more curved in shape than it is at present, and terminated towards the upper end, beyond Hart-street, in a *cul-de-sac* that abutted against the back of Long-acre at a spot a few yards east of Phœnix-alley, since Hanover-court, the last home of John Taylor, the Water Poet. Hatton, in his "New View of London" (1708) calls it "a spacious Str. betn. *Russel Str., Covent Garden*, SEly, and near *Long Acre*." Strype, writing in 1730, describes it as being "open and large with very good houses, well inhabited, and resorted unto by gentry for lodgings, as are most of the other houses in this parish" [St. Paul's]. But within four or five years it rapidly declined in favour; a downfall to which the Police-court, with its inevitable surroundings, in all likelihood largely contributed. Amongst its inhabitants during the decadence were Edmund Curll, at No. 1; Spranger Barry, over what is now Mrs. Edwards's ham and beef shop, and was formerly Will's Coffee-house;* and Dr. Johnson, who came hither from the "Black Boy" in the Strand, and quitted his lodgings for others in Holborn. For Rich's theatre was pulled down the house which Dr. Radcliffe had occupied during the interval 1687-1714. It was whilst residing here that he had the famous passage of arms about the garden door with

* This shop, with a private door opening out of Bow-street, is now 21, Russell-street. First known as the Red Cow, and then as The Rose.

Sir Godfrey Kneller, who lived in the Eastern Piazza (Bedford Hotel). Three doors from Radcliffe, at the widow Hilton's, opposite to the "Cock," lived Wycherley, with his wife, the Lady Letitia, widow to Charles, second Earl of Drogheda; and it is in the "Cock" tavern, on the eastern side of Bow-street, that he lays two of the best scenes of his "Plain Dealer," wherein, as elsewhere, he excels all our comic dramatists for his truth of detection of what is cant, and in exposing hypocrisy: the play is worth volumes of sermons. Tonson, too, had his private house and printing-office in Bow-street. At No. 3 lived Marcellus Laroone (1680-1702), who drew the figures for Tempest's "Cries of London." The house which Grinling Gibbons occupied for many years was, if we mistake not, over against the present Strand Union Relief and Register offices. On the eastern side, too, once lived Major Mohun, the actor, and William Longueville, friend to the author of "Hudibras." In this street was born (1661) Robert Harley, Earl of Oxford; and Waller for two years was tenant of the house on the site of the old Police-court. Here Waller composed his famous Panegyric upon Cromwell, for whose superiority as compared with his subsequent Congratulation he excused himself to the King in saying that poets succeed better in fiction than in truth. In his rooms at the northern end of the street, Bonnell Thornton held (1762) an exhibition of paintings in ridicule of the Society of Arts,—for as yet the Royal Academy was not,—which we have seen imitated in our own day by Mr. Furness's humorous set of drawings recently collected at the Grosvenor Gallery. To finish, though not to complete our list of worthies, we must cite one other name,—as immortal, indeed, as any we have mentioned. Sukey receives a letter, gives it to Will Honeycomb, and Sir Andrew Freeport reads it to the club, which concludes:—"If you would go down to the country, and leave off all your vanities but your singing, let me know at my lodgings in Bow-street, Covent-garden, and you shall be encouraged by your humble servant, Roger de Coverley."

THE ARCHITECTURAL ASSOCIATION:

THE PRESIDENT'S ADDRESS.

The first meeting of this Association for the present session took place on the 21st inst. in the meeting-room of the Royal Institute of British Architects, which has been kindly placed at the disposal of the Architectural Association for its meetings. Mr. John Slater, B.A. (President), occupied the chair, and there was a very large attendance.

Seventy gentlemen were nominated for membership, and Mr. William Emerson was elected a member by acclamation.

The Chairman announced that Mr. P. J. Marvin had been nominated to serve on the Committee in place of Mr. E. Guy Dawber, resigned. The name of Mr. W. J. H. Leverton also being proposed, it was decided to take the vote on a later occasion.

Votes of thanks were passed to those gentlemen who had afforded facilities for the interesting visits made during the vacation. Votes of thanks were also passed to the Entertainments Committee, to Mr. Briggs, and to the various exhibitors at the recent *conversaziones*, a special vote being awarded to the Manager of the Hotel Windsor for kindly lending a pianoforte in an emergency without remuneration.

The Chairman then distributed the prizes, of which we published a list in the *Builder* for Oct. 15, p. 525, to which we may now add that the Sketch Book Prize was awarded to Mr. A. B. Pite.

The annual report of the Committee, and the Treasurer's account, were adopted by the meeting, and a special vote of thanks passed to the hon. auditors, Mr. A. C. Bulmer Booth and F. E. Eales.

Mr. Slater, who was very cordially received, then delivered his Presidential address, which was as follows:—

Gentlemen,—My first duty in rising to address you this evening is to express my warmest acknowledgments to the members of this Association, both those who are present and many who are absent, for the honour you have done me in electing me to this position. The feelings of the occupant of this chair on the threshold of his year of office must necessarily be of somewhat complex character, as mingled with the pride and satisfaction one experiences at having been thought worthy of filling the position of President of the Architectural Association, there must be considerable anxiety as to one's ability to perform its duties in such a way as to maintain the prestige of the Association at the high level which it has attained.

When an association or society is approaching the fiftieth year of its existence, and numbers on its roll nearly 1,000 members, no one can for a moment call in question its complete success, for its position speaks for itself and is beyond cavil. But it appears to me that in this very success lurks an element of danger which, unless it be carefully guarded against by those who have the conduct of the affairs of the society, may at no very distant time threaten the stability of the fabric which has been so carefully reared. This danger is twofold: on the one hand, there is the tendency to point to what has been done and to ignore the ever-changing conditions of the times, and consequently to crystallise; on the other hand is the tendency to ignore the past and to rush eagerly and impetuously along new paths without carefully studying the direction which those paths take. We shall best guard against this double danger in the case of such an Association as our own by occasionally reviewing its history and ascertaining what were the aims and objects of its founders, by seeing how these aims have been varied with the growing requirements of the times and how in the present day they still demand modification. It seems to be the fate of all great undertakings to have their origin wrapped in a certain amount of obscurity, and this Association is no exception to the general rule, as the records of its early years are most meagre; but I believe it to be a well-authenticated fact that it developed from the Society of Architectural Draughtsmen, which was founded in 1842 by a small band of earnest workers. The objects of this Society were threefold. 1. To assist the members in obtaining employment. 2. To foster good draughtsmanship, by making it a rule that every member should furnish quarterly a drawing of some executed architectural subject. 3. The establishment of a benefit fund upon which the members could draw in the event of sickness. I may say in passing that I think it would have been a wise thing if the Association could have retained as part of its functions this last object in some form or other.

The society had some difficulty in getting a firm footing; but in July, 1845, the *Builder* had a short notice of it, stating that "the association seems now to be very satisfactorily organised, and promises to be useful in facilitating communications between its members and the profession generally." The works contributed by the members turned out to be of such excellence and of so much general interest that in September, 1845, the first public exhibition of drawings was held in rooms in Southampton-street, Strand. This attracted general attention, and was of great use in increasing the number of members. On February 3rd, 1847, a most important and, as the Germans would say, epoch-making, paper was read by Professor (then Mr.) Kerr, in which he sketched the outline of an architectural association of students for mutual instruction and improvement. The opening sentences of that paper were as follow:—"When I say that the present system of architectural education is extremely defective, I may appeal for confirmation to the experience of every one of you, and this is so much the case that the architect is perfectly anomalous among professionals." That, gentlemen, was over forty years ago. Looking at the experience that has been gained since then, and making every allowance for the improved opportunities of study which now exist, should we be far wrong in using precisely the same language in this year of grace, 1887? Can we say now that the present system of architectural education is other than extremely defective, or that the architect's position, as compared with that of other professional men, is other than absurdly,—I might almost say disgracefully,—anomalous? The result of this paper was the establishment of the Architectural Association, which held its first *conversazione* in Lyon's Inn Hall on October 8th, 1847, the report of which says that "it was held under very promising circumstances, more than 100 gentlemen being present." Compare that meeting with our *conversazione* a fortnight ago, and you will have some notion of the progress which the Association has made. In November, 1847, it numbered eighty members. The objects of the Association were stated to be,—(1) the development of true principles of criticism in architecture; (2) the advancement of the study of design; (3) the provision of means whereby the student may acquire an aptitude for applying and extending the present materials of the art. The new society soon gave evidence of its vitality by appointing a committee to investigate the question of competitions, which, even then, was a burning one, and in 1849 a very able report was issued. Matters seem to have gone on more or less successfully for the next few years until we come to 1856, which was a stormy year in the annals of the Association. On May 2nd in that year a series of resolutions were moved, the last of which affirmed "that the Architectural Association having been virtually renounced by both the elder and the younger members of the profession, there are sufficient reasons for taking the requisite measures for dissolving the society." I am unable to trace the causes which led to this resolution being proposed,—fortunately it was not carried,—but there had evidently been considerable differences of opinion among the members, much friction between the Association and the Institute, and some very outspoken criticism of the latter's proceedings. The discussion which ensued on the moving of this resolution led the Institute to take what I believe was its first formal recognition of the Association by addressing to its officers a very dignified letter, which contained suggestions for a much closer union between the two bodies, and which finished with these weighty words which I would urge every architect of to-day to take to heart, for they are as true now as ever they were:—"The Council desire to record their opinion that every alienation among its members tends to a lowering of the social weight and position of the profession as a body, and that a policy of affiliation is infinitely to be preferred to one of repulsion and isolation." Unfortunately, the only idea of union which the Institute seemed able to grasp at that time was that of complete fusion, and after a certain amount of discussion, a resolution was passed that this was not expedient. It was evidently felt that the Charter was not liberal enough for the Association. Notwithstanding the internal condition of the Architectural Association in this year, it had just previously done one of the most important services ever rendered to the profession, as, in November, 1885, it memorialised the Institute on the subject of examinations, and begged that body to frame some kind of examination for students, the passing of which should be the outward and visible sign of honest study, hard work, or intrinsic ability. The Association was very urgent in this matter, as although the idea of holding examinations did not find favour with the Royal Institute of British Architects at the time, it was pressed again and again, until at last,—not, however, till six years had passed,—the Voluntary Examination was instituted. It is both curious and interesting at this time to see what matters the Association turned its attention to; for instance, in the next year, 1857, a formal resolution was passed expressing the opinion of the Association "that the privilege of the Saturday half-holiday should be accorded to the pupils and assistants of architects in London and the United Kingdom." You see the immense vitality of the young body: the vexed subject of competitions was not too high for it, nor the Saturday half-holiday too low. An important event occurred in 1859, namely, the removal of the Association from Lyon's Inn Hall to Conduit-street, the first *conversazione* being held there on April 2nd, 1859. It is very interesting to notice that, even at that time, there were such strong sticklers for independence as to oppose this move, on the ground that it must bring the Association too much under the influence of the Royal Institute of British Architects. Notwithstanding all its vitality, however, it is clear that the Association had not yet got into its proper groove, as we find that again in 1860 a resolution was proposed and carried to this effect: "That the members of the Architectural Association have not afforded and do not afford that practical support in its working which is necessary for carrying out its objects, and that it is, therefore, desirable that the committee should further consider and report whether there is any course short of closing its oper-

ations which they can recommend for the adoption of the Association." A special committee was appointed, and they reported the condition of the Association to be critical, but as its usefulness had been very great they were unwilling to recommend that it be broken up until every means had been tried to restore its efficiency. Most fortunately for us, and for many hundreds of others who have passed through the ranks of the Association, means were found to restore its efficiency; new classes were formed, and a lending library was established, the value of which cannot be overstated; and from that time to the present, with slight and inevitable vicissitudes, it has gone on increasing its numbers and widening its sphere of action until it has become the large and powerful body which it now is. Now, gentlemen, I have compiled this hasty sketch of the early history of the Association because I think it both interesting and instructive. We are now able to take a judicial view of those years. What is the reason that after completing its tenth year, on two occasions within five years thoughts of closing its operations were seriously entertained? Forty years ago design and draughtsmanship were considered almost the sole essentials for an architect,—the nucleus of the Association, as we have seen, was the Society of Architectural Draughtsmen. Design was its main object. For the first twelve years after its formation the Class of Design was the only class in existence; then in 1859 a class of modelling was formed, which had but a languid existence and finally expired in 1863. The whole scope and objects of the Association were too narrow and were kept too rigidly to the original lines. New ideas as to the necessity of an architect's acquiring some practical and scientific knowledge were gaining ground, and it was by conforming to these ideas, by widening the whole range of mutual study, by the institution of such classes as those for preparation for the Voluntary Examination of the Royal Institute of British Architects, which have gradually developed into the various classes which we now have, by leaving the old tracks and by entering upon new courses, that failure was averted and success assured. May I venture, most respectfully but most earnestly, to beg some of those old and honoured members of the Architectural Association who have done and are still doing yeoman service for it, and who sometimes think that we are venturing upon somewhat risky experiments, to look back on those years, 1856 to 1860, and to bear in mind the words of the American poet, who says:—

> "New occasions bring new duties,
> Time makes old things seem uncouth;
> They must aye be pressing onward
> Who would keep abreast of truth;"

and by truth I mean the growing requirements of the times.

I do not ignore the opposite danger which I alluded to, that of going too fast and too far in new directions, but you must remember that, although the individual constituents of the committee are constantly changing, it always contains more old than new members, so that there will always be a preponderating inclination towards following precedent rather than towards departing from it; and when any terribly novel course is suggested, as occurred for instance when the daring iconoclastic proposal to raise the subscription was mooted, the conservatism of the general body can always be successfully appealed to to resist innovation.

To turn now from the historic to the more immediate past, it is my pleasant lot to congratulate the members upon a most prosperous session; the meetings have been well attended, the classes have been more numerous than ever before, and the work done has been of a very high order of merit. I cannot refrain from making special mention of the Masonry Class, which Mr. Lawrence Harvey kindly conducted gratuitously, and I feel confident that every member of that class will appreciate the advantages of joining it increasingly as his professional practice enlarges, for nothing gives a man greater facility in designing than a thorough knowledge of form, and I can conceive of no better way of gaining this knowledge than by acquiring practical experience in the various problems of stone-cutting. I trust that this class will not be allowed to lapse, but that many members will avail themselves of Mr. Harvey's instruction at the City Guilds Institution. Mr. Quick's lectures on "Graphic Statics" also deserve a word of mention, and I would strongly recommend them to the more advanced students. It is much to be regretted that the Class of Colour Decoration has not been better supported, and I cannot help thinking that there are many students whose tastes lie in that direction who would derive great benefit from joining this class; and as an inducement to the study of this branch of our art, I would remind you of the valuable Owen Jones Studentship at the Institute, which is now given for the best design in colour decoration, for which this class would form an admirable practising ground. The lectures will be continued on slightly different lines from those of the past session. Mr. Tarver gives up the History lectures, and the best thanks of the Association are due to him for the immense amount of time and trouble which he has given to these lectures. Other short courses will be given by Mr. Sedding and Mr. Stannus, the latter gentleman taking the Classic and Continental styles, and Mr. Sedding confining himself to English architecture. Mr. Lovegrove, who always gives his time and labours ungrudgingly to the Association, will continue his excellent course of lectures on Construction. In connexion with these classes and lectures, it is worth noting that by the liberality of extraneous donors the list of prizes that can be obtained by students has been much enlarged. This I think a matter for congratulation. Possibly in an ideal community work would always be pursued for its own sake, but I am quite sure ninety-nine persons out of a hundred work better if they have a goal to aim for, and the healthy stimulus of friendly rivalry for a prize is, in my opinion, productive of great good. But this friendly emulation is a very different thing from pot-hunting, which should be guarded against most rigidly, and I believe it is effectually guarded against by our rules. With reference to these prizes, I would specially call your attention to the foreign travelling studentship which Mr. Aldwinckle's liberality has thrown open to the members of the Association, the regulations for which have been slightly modified. It would be telling a thrice-told tale were I to attempt to describe the manifold advantages which foreign travel affords to an architect: it is, in fact, absolutely indispensable. I feel confident many students would be glad of the assistance which this prize would afford them, and I do most earnestly hope that at the close of the current session the Committee will not have the thankless task of informing Mr. Aldwinckle that there has been no worthy candidate for his prize. It is a matter of great regret to the Committee that one prize has not been awarded, owing to the fact that there has not been a single competitor for it: I allude to the Essay Prize. Now this is not as it should be. However clever an architect may be, a little literary grace will never come amiss to him, and the information gained in reading up for the Essay Prize, combined with the practice in putting down the result of your reading in good, nervous, idiomatic English, will be of great value to every student. I do beg of you to bear this in mind, and I hope we shall have good competition for this prize next year. The vacation visits instituted last year have more than kept up their popularity, and serve an important educational purpose, affording students an opportunity of inspecting both old historical specimens of English architecture, like Loseley and Sutton Place, and the new methods of the most able modern practitioners. The annual excursion, which was first set on foot by the late Mr. Sharpe, is still most attractive. In reviewing the past session I must not overlook one very pleasing event, viz., the appointment of an old President of the Association, Mr. Blashill, who has shown the great interest which he still retains in its work in the most practical way by founding a studentship, to the important post of Superintending Architect of the Metropolitan Board of Works. To another member of the Association, Mr. Collcutt, has been awarded the high honour and the difficult task of carrying out the important buildings of the Imperial Institute, and it is worthy of remark that of the six gentlemen who were selected to compete for this work four are members of this Association.

A word of notice is due to the establishment of the "A. A. Notes," under the editorship of one of the most hardworking, versatile, and efficient officers the Association has ever had, Mr. H. D. Appleton. The work of the Association is now so extensive and of so varied a nature that some such publication was much wanted in order to keep members *au courant* with what is being done. It offers an admirable medium for suggestions of improvement and for friendly criticism of the action of the executive, and as the subscription is very low, I hope this next session its circulation will largely increase.

One of the salient features of the last few years' history of the Association has been the increase of the *entente cordiale* between us and the Royal Institute of British Architects, the outward and visible sign of which is that we are holding our meeting in this room, and I heartily congratulate the members upon the fact, as I feel sure you will all be much more comfortable than downstairs. I propose to examine this closer connexion between these two bodies somewhat in detail, because I am most anxious that there should be no misunderstanding among the members of this Association as to its meaning. I pointed out to you that when we first moved to Conduit-street some members objected, on the ground that we were getting too close to the Institute, and some may hold the same opinion as to this latest move. Now, gentlemen, I believe I am only stating the literal fact when I say that there is not a single member of your committee who is not thoroughly convinced that anything tending to diminish the independence and freedom of action of this body, anything likely to make the Association an appanage or dependency upon any larger body, whatever it may be called, would be to sign the death-warrant of the Architectural Association. I am one of the strongest advocates for making the connexion between the two bodies as close and intimate as possible, but I am a stronger opponent of anything approaching amalgamation. Each body has work to do which cannot be done by the other, but each can give the other material and valuable assistance. At one time, as I mentioned in the brief *résumé* of the history of the Association, there was a feeling of jealousy and coldness between the two bodies which was most prejudicial to the interests of each, which lost this Association the services of some of its ablest and most hardworking members, and which, if persisted in, would, I verily believe, have wrecked the Association. It would be useless to inquire now as to where the fault lay, but probably it would be found to be on both sides; but those feelings have now gone, never, I trust, to return, and it should be and I believe will be the earnest endeavour of the two bodies to work together for the advancement of education, the furtherance of art, and the general well-being of our noble profession. The proud motto of the Institute, "Usui civium decori urbium," can only be realised by following the motto of this Association, "Design with beauty, build in truth." That there is ample work connected with the architectural profession wanting doing that would tax the energies of any Society or combination of Societies, however powerful, must be patent to any one who has given the slightest attention to the position of architecture and architects at the present time in this country; and this work can only be done, not by frittering away energies in isolated attempts at improvement, not by blaming the executive of this or that institution for not doing more and yet moving never a finger to help them, not by opposing endeavours to obtain increased powers and enlarged means of usefulness, but by uniting hand to hand and shoulder to shoulder, and making the most urgent endeavours to attack the problem as a whole. What the precise form of relationship between this Association and the Institute will be when the latter gets into full work under its new Charter and By-laws is not yet quite clear, but it seems to me that it should be something like that existing between the University and its colleges. These all manage their own affairs entirely and provide for their students the means of obtaining instruction; but the University, by the establishment of degrees and shaping the examinations, and by grants for lectureships, exercises considerable influence upon the curriculum and always avails itself of the advice and co-operation of the executive of the colleges. Of course, the analogy is not complete, as a University has to do exclusively with teaching, whereas a society like the Institute has much to do with practice as well as with education. But the examination which was set on foot by the Institute has shown most clearly that architectural training and education

are the subjects which most emphatically require urgent attention. This examination seems to me to be somewhat like an advanced guard sent forward to examine an enemy's country, and the chief thing that has been discovered is the nakedness of the land. The difficulty of providing adequate means of acquiring professional knowledge for the young men who are coming into the profession every year in shoals is almost appalling in its magnitude. I do not ignore the existing means, rather would I call special attention to them, such as the two colleges in London whose architectural students are presided over by two eminent professors, both of whom are past-Presidents of this Association, and where, as I can testify from personal experience, excellent work is done; and I fully acknowledge the efforts which are being made by Sir Philip Magnus at the City Guilds Institute, and by other technical colleges and schools in the country, and latest of all by the plucky action of two members of this body in establishing a studio; but when you take the average yearly number of students at all these institutions for the past few years and compare it with the number who enter this Association, it is perfectly evident that the institutions I have named do not reach one tithe of those who are preparing themselves for architectural practice. In this matter of education the Association has for some time been well in the van. Since I became acquainted with the inner working of the Association I have been perfectly amazed at the amount of voluntary work which it does, which is most honourable to the Association and the members. But the question arises whether this voluntary work is adequate and whether it is the best. Many of the older members of the body tell us that the voluntary system is the essence of the Association. By all means let it remain so, and there can be no question that there will be ample room for all the voluntary work that can be obtained. But is there any reason why this should not be supplemented by more extended educational work of a higher kind, and which cannot be obtained gratis? There is many an able man perfectly competent to conduct classes, or to give lectures, who simply cannot afford to give his time for nothing, or even for the ludicrously small sum which the Association pays its lecturers, and I confess I can see nothing derogatory to this Association in accepting grants for lectureships, as shadowed forth in the opening address of the President of the Institute last year, supposing funds were available from the Institute; for I really believe that the limit has been very nearly reached of the voluntary work of the Association.

A writer in the "A. A. Notes" has pertinently asked what provision the Association makes for preparing its members for the Institute Examination, and has suggested sweeping reforms in the methods of imparting instruction. It is not a complicated arithmetical problem to ascertain what 1,000 half-guineas amount to, and a glance at the revenue account will show what balance the Association has, after paying the absolutely necessary outgoings, for increasing its usefulness in this way; and for my part I think the suggestions to which I have alluded worthy of the most serious attention. In this connexion may I venture to make an appeal to members of the Association? I believe some old members hold the opinion that after a time they should resign membership of the Association, and leave the work to younger men. As far as the work is concerned, this may be so; but I would remind them that very little can be done without the sinews of war, and I would beg of them to leave their names on the books, and give us their small contributions yearly, upon which so much depends. The committee would willingly do more to assist with the preparation of candidates for the Institute Examination if they could, but I very much fear they have got to the end of their tether. And after all, gentlemen, the question does force itself upon my mind very frequently,—Do we get the best work of one individual in a thousand if it is given voluntarily?

The Institute Examination is so intimately connected with our work that no excuses are needed for referring to it again, although it has been dealt with by every President of the last three or four years. Some people consider the examination a success: these are those who look at it from the outside, and see that a fair number of candidates present themselves; others, who look at it more from the inside, and have opportunities for judging of the nature of the work done, are sometimes disposed to be despondent and vote it a failure. But I do not think two opinions exist as to the immense amount of good which has been already done by its establishment. *Crede experto.* Ask every candidate who has presented himself, whether he passed the first time, whether he failed at the first attempt and has subsequently succeeded in passing, or even if he has as yet only made the attempt to pass, and I believe every one will tell you that the mere preparation for the Examination has done much to widen his horizon and to increase his interest in everything connected with his professional work. I am not saying that either the general scheme or the details of the Examination are perfect, because I believe both require modification, and I quite hope to see improvements made in it before another year has expired, but what I want to impress upon all members of this Association, whether students or masters, and if by chance any faint echo of these words of mine may reach them, others who are not members of this Association, is this: that passing the Institute Examination, and the subsequent if not consequent Associateship, should be considered as essential a part of the training of an architect as being articled or learning to design. I do not believe it possible to overrate the value of such an examination if it be made the goal of our early studies in methodising and focussing, so to speak, those studies. I know from personal experience how difficult it used to be twenty years ago, ay, how difficult it is for every one of us as we grow older, to avoid being *dilettanti* or sciolists, and how apt we are to consider superficial knowledge sound knowledge, simply from the lack of some means of putting it to the test. This test the Examination supplies, and I want every student of the Association to make up his mind that it will be in some degree a disgrace not to pass it, and every master to feel it a duty to assist his pupil to pass it, with advice and instruction on the one hand, and by allowing him time to prepare for it on the other. I should like to endorse, as strongly as I possibly can, the recommendation of Mr. I'Anson that the Examination should be recognised by a clause in the indentures of every articled pupil. And this applies not only to London, but to the provinces also. There are differences in the mode of carrying on practice in the provinces and in London, which prove almost insuperable obstacles to framing rules of practice which should be equally applicable in all circumstances and in all parts of the country; but the necessity of recognising this Examination is equally binding upon all members of the profession wherever they may be established. It is a gratifying fact that although it has only been established five years the Examination has been already held at three provincial centres, and I should strongly advocate increasing the number of centres, even though the candidates were very few at first, because I believe it would awaken an interest in the subject, and open new ground. I see no reason why, supposing funds were available, the Association should not assist in this work. We have for a long time had one country branch affiliated to ourselves, and I do not think it would be difficult to devise a scheme whereby other provincial societies might enter into relations with us, somewhat on the lines of affiliation, to the mutual advantage both of them and of ourselves; in fact, I think it quite possible that this Association may turn out to be the medium for bringing about that consolidation of all branches of the profession which is aimed at by the various suggestions for federation which have been so much discussed during the last twelve months. Instruction by correspondence cannot, of course, be so efficient as by word of mouth, but still it is largely adopted by the Universities, and in our own case I believe the Birmingham members attach great value to the papers which are sent down from London for perusal by the country members of the Construction Class; and this class teaching might be supplemented by occasional visits from the London members, or by lectures on the Institute Examination, or in other ways. These are only suggestions which I throw out as instances of what might be done in the way of additional work. There is, however, one warning which the student should ever bear in mind in reference to the Examination. Look at it not as an end, but as a means; not as the climax of your studies, but as an incentive to fresh ones; not, as the logicians would say, as a *terminus ad quem*, but a *terminus a quo*; and if you take this view of it, there will be no fear of its becoming anything but an unmixed good. In commenting upon the state of architectural education before an assembly like this, I always have an uncomfortable feeling that I am open to the criticism of carrying coals to Newcastle. I am sure that every one here would endorse my words, but the people who want convincing are the outside public,—the parents and guardians of the youths who are soon to be sent out in a plastic state to be moulded into more or less capable architects. Until the general public are convinced that architecture is a liberal profession, and must be treated liberally, we shall not see the improvement which is so desirable. It is useless to rear a substantial building upon a rotten foundation, and we may go on improving the facilities for architectural education in vain unless the absolute necessity of a thorough and first-rate general education for an architect is fully recognised. It is thought quite natural that before studying Law or Medicine a boy should go through a college course, and after that he would not be expected to earn anything worth speaking of for some years; but many lads are articled to an architect at the age any of sixteen or less, and are expected after three years to be able to earn their own living. What is wanted to be known is that such a system as this is not only unwise and ineffective, but that it is extravagant, and that in the long run it will pay better in actual pounds, shillings, and pence, to keep a boy at school for another two years and then give him a course at a technical college or at one of the Universities before he is articled to an architect. Just look at what is required of an architect nowadays. Not only must he be able to design anything, from a stable to a church, and be fully acquainted with the nature and properties of the materials which he uses, but he must be a bit of a geologist in order to distinguish between alternative sites for a house that are submitted to his decision; he must know enough chemistry to be able to advise on the prevention or cure of decay in timber or in stone; he must be a mathematician and competent to calculate the strains on the various parts of the buildings which he erects; he must have sufficient knowledge of electrical science to be able to exercise a certain amount of individual judgment as to the merits of rival schemes of electric lighting; while as to sanitation, if he is not able to give a good account of his drains, and to justify his scheme of traps, disconnecting chambers, &c., he will be held up to obloquy by some candid critic in the press as being very nearly guilty of manslaughter. In fact, so multifarious are the duties that an architect is called upon to perform that his client seems sometimes to expect him to have a mechanical engineer up his sleeve and a specialist in each of his pockets. You may employ specialists for these various works if you like, but depend upon it if anything goes wrong, you the architect would be the first person called over the coals by your client. And yet, though all these things are required of him by the public, will any one say that in very many cases the public recognition of an architect's services and position is at all what he ought to expect if he be a capable man? And that is a condition which we all should do our best to see fulfilled as far as training can fulfil it.

The practice of architecture used not always to be held in low esteem. Cicero classes the architect as next in importance to the physician, and the Romans generally accounted architecture the most respectable, as it was then the most lucrative, of all the arts. The same views obtained during the later years of the Roman Empire. In the latter part of the fifth century, A.D., the Emperor Theodoric issued a document which appears to be a sort of general instruction to his Government architects, and which proceeds thus:—"It is no slight business which is entrusted to you, since by the practice of your art you have to carry out the ardent desire which possesses us of erecting new buildings. Whether it be a question of beautifying a city or of erecting a prætorium for ourselves, we look to you to give practical embodiment to the schemes which we have in our mind. We wish to have expression given to our ideas in so appropriate and so stable a fashion that the only difference between our buildings and those of the ancients should be their newness. What can be a more honourable employment! what a more glorious function!

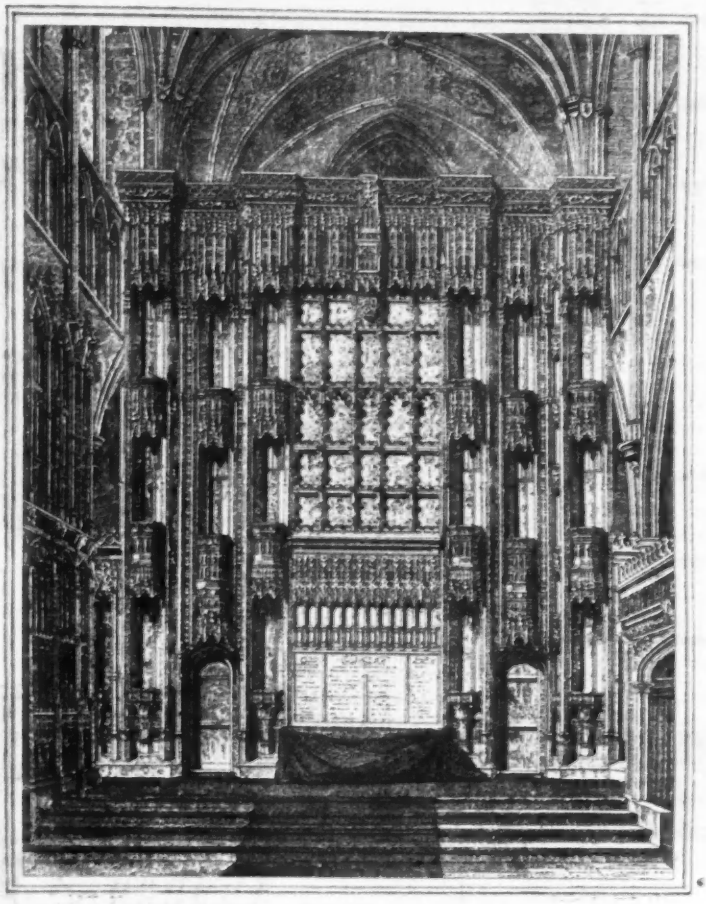
than that of bequeathing to the remotest ages monuments which will assure for you the admiration and the plaudits of posterity. For it is your task to direct the mason, the sculptor, the bronze worker, the plaster modeller, and the artist in mosaic. You have to teach them what they are ignorant of and to solve the difficulties brought to you by this host of artificers who work under your guidance and who must have recourse to your better judgment. See, then, what resources he should have who has so many to instruct. But you will enjoy the reward of your labours, and the success of the operations which you direct will form your eulogy. Observe the distinction which you enjoy. You walk immediately in front of ourselves surrounded by a numerous *cortège* with the gold wand in your hand, a prerogative which, as it brings you near our person, announces that to you we have entrusted the care of our palaces."* This was the recognition given to the art of architecture by the rude king of the Ostrogoths, and I fear we shall look long and look in vain for such appreciation now. But, gentlemen, let us bear this in mind, that the recognition of our profession depends upon each individual one of us. The outward display which is so striking a feature of our times and under the influence of which the speculating builder runs up elegant villas with elaborate stone dressings outside and enriched plaster cornices inside, while he builds his walls with bats and shuffs and forgets to parge his flues and to connect his drain-pipes,—this same display has affected the architect, and is seen not only in the palatial exteriors which mark some of our new buildings, but also, I venture to think, in the excessive modern elaboration of draughtsmanship. You must remember that it is not so much elegance of drawing as knowledge of details that is required in practical work; that comfort and substantiality in the erected building will be more appreciated by the client than the appearance of the plan and elevations on paper; so that while not neglecting draughtsmanship,—don't imagine I am disparaging that,—try and make it only a means of assuring more accurate knowledge. Our profession is really a noble one, and it behoves us all never to lose sight of this fact. We have a responsibility not only to our clients, but to ourselves and our colleagues. We should each of us consider that in us as individuals is deposited the honour of the whole body; that a delinquency on our part, a lapse from the high standard which we should set up for ourselves, or even only a manifest display of incompetency in work which is entrusted to us, may do far-reaching harm and is a slight upon the other members of our profession. We should bear in mind, as Bacon says, that we have "as well to create good precedents as to follow them," and although we cannot all be a Michelangelo or a Brunelleschi and hand our names down to posterity "in records that defy the tooth of time," we can all earnestly endeavour to do thoroughly and well the work that comes immediately to our hand, and if this spirit animates us, whether as students in our preparation or as principals in our practice, we shall do what lies in our power to uphold the dignity of our art and to hand on the Lamp of Architecture with its lustre undimmed to those who are to come after us.

[A report of the discussion which followed is in type, but for want of space we are obliged to hold it over until next week.]

The Surveyors' Institution.—The first ordinary general meeting of this Institution for the present session will be held on Monday, November 14th, 1887, when the President, Mr. W. J. Beadel, M.P., will open the session with an address. Chair to be taken at eight o'clock.

Hospitals Association.—The second evening meeting of the fifth session of the Hospitals Association will be held (by kind permission of the Weekly Board) at the Board-room of the Middlesex Hospital, Berners-street, Oxford-street, on Wednesday, the 9th of November, at 8 p.m., Sir Douglas Galton, K.C.B., in the chair. A paper will be read by Mr. Keith D. Young, F.R.I.B.A., on "Hospital Construction," to be followed by a discussion. Cards of admission can be obtained, on application, from Mr. Howard J. Collins, secretary, the Hospitals Association, Norfolk House, Norfolk-street, W.C.

* Cassiodorus Variarum, lib. vii., c. v. "Formula curæ Palatii."



The Screen, St. Alban's: as Engraved by Le Keux after a Drawing by J. P. Neale.

Illustrations.

THE SCREEN AT ST. ALBAN'S.

We give a view in the present number of the celebrated screen at St. Alban's Cathedral, as it has now been restored.

The condition of the screen when it was proposed to restore it is well exhibited in Nash's picture (engraved in Clutterbuck's "History of Herts"), except that the unsightly and incongruous plaster work there shown as covering the place of the cross and the six central niches was removed by the late rector, Dr. Nicholson.

The bases of the four upper niches and the canopies and bases of the lower ones had been shaved off flat to enable the plaster-work to be put on. It removal showed the original face of the stone on the blank space where the cross had been. The top of the screen had served as a thoroughfare from one side of the triforium to the other, and, as a natural consequence, the whole of the cresting, except one small fragment, had been knocked off. All the pinnacles of the tabernacle work had been knocked off, and almost in every case not broken but removed from the leaded sockets. The only part wantonly damaged, if we except the crucifix, was the tabernacle work over the altar, its cresting and the ornamental filling-in of the hollow above the pinnacles having been destroyed, and the pinnacles themselves and the ornamental work of the bases much damaged.

The central portion of the tabernacle work above the cross,—that which corresponds to the "spire" in the Winchester screen,—was apparently an ancient reparation, made by putting together pieces which were not meant to be together. Apparently they were ill-put together, and the whole thing was, in fact, askew and unsafe, and had been supported at some later time by a classical bracket of rather bad workmanship. In this no other alteration has been made than to reset it and make it straight and safe, and to substitute a canopy for the bracket.

The two or three fragments of pinnacles which had not given way at the headings, but had remained fast, though broken, gave an indication for the restoration of the others, and in this the tabernacle work of the smaller niches, fortunately quite uninjured, afforded great help The new pinnacles were not servilely copied but independently designed.

The scheme of the screen was evidently a group of the Crucifixion in the centre, over the altar, and at the two sides figures of saints, witnesses in later times to the faith in the religion of Christ, of which His Crucifixion was the crowning act. The group consisted of the crucified Saviour and the witnesses then present, namely, His Mother and St. John, four angels above, and four more adoring, in the smaller niches. These ten figures are completed and in their places, but the central figure is not yet put in hand. It is to be hoped, as the work has gone so far, that it will be completed ere long.

The scheme for filling the other niches was this. As the chroniclers had left no record of what figures filled them it was necessary to choose those who were most appropriate, viz., English Saints who bore some relation to the Abbey, foreign Saints who have the same qualification, and Saints in the English Calendar.

In these two classes may be mentioned the Ven. Bede, the historiographer of St. Alban; St. Hugh of Lincoln, in whose Diocese the Abbey was; St. Benedict, whose rule the Abbey followed; and (among the small statues) St. Osyth, who with others here represented had an altar in the Abbey.

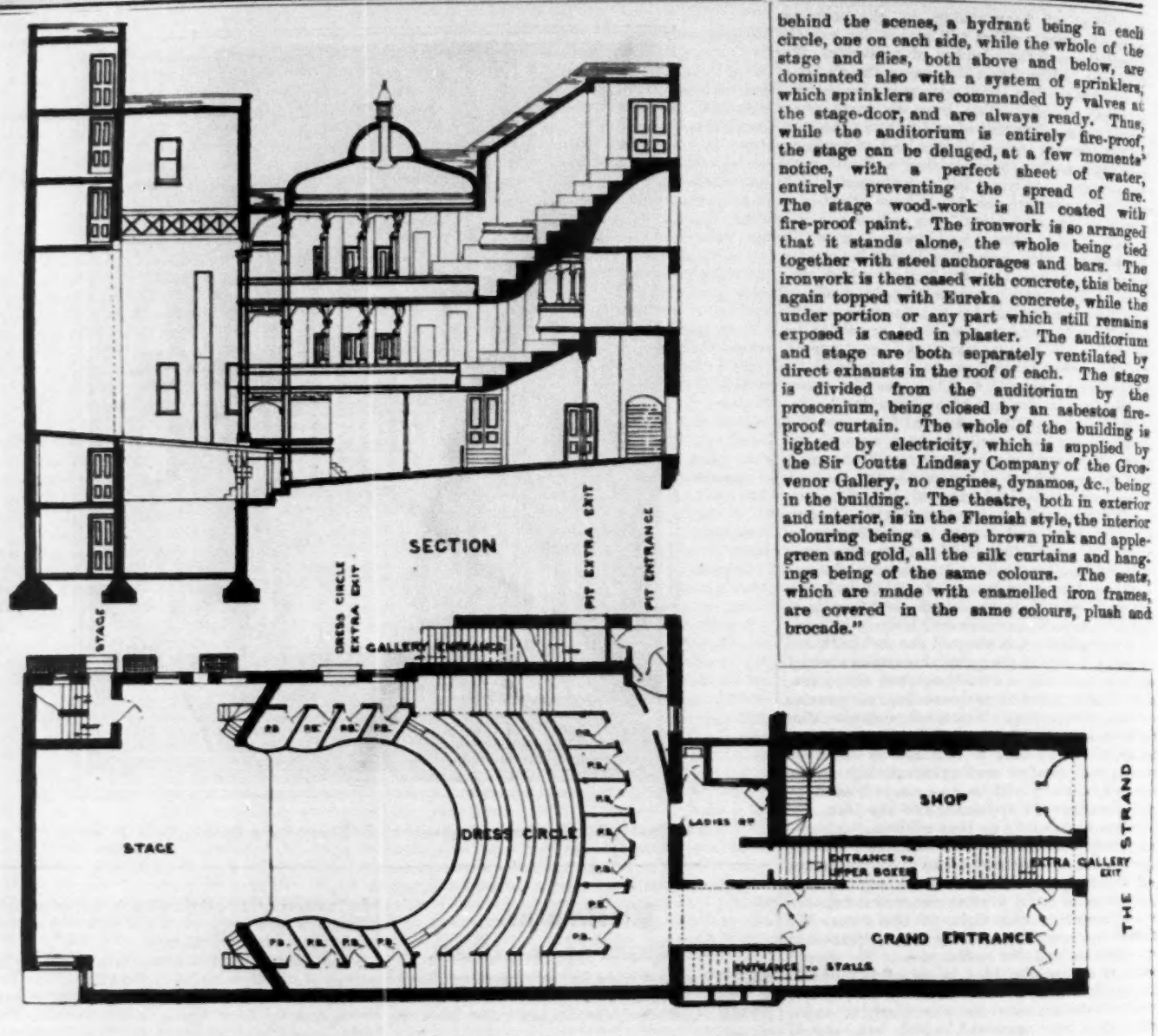
There are also included two who were not Saints, King Offa II., who founded the Abbey, and Pope Adrian, the only English Pope, who was born close to St. Alban's.

The only statues now remaining to be done are Saints Augustine, Alban, Amphibalus, and Erkenwald (all nearly completed), and the figures of the Annunciation, which will occupy the two canted niches north and south. There are also two of the small niches unfilled.

The material of the screen is clunch, and of the statues Mansfield Woodhouse stone.

The thirteen niches over the altar will contain alabaster statuettes, about 15 in. high, of Our Lord (in majesty) and Twelve Apostles. Two only are yet in place.

There are twenty full-sized statues, four smaller, and twenty-eight still smaller; the height of the large niches to the soffit being about 6 ft. 6½ in., the second size 4 ft. 3½ in., the third 3 ft. 3 in., and those for the two kneeling angels 2 ft. 9 in.



PLAN at DRESS CIRCLE LEVEL

SCALE 0 5 10 20 30 40 50 60 FEET

"Terry's Theatre," Strand.—Plan and Section.

behind the scenes, a hydrant being in each circle, one on each side, while the whole of the stage and flies, both above and below, are dominated also with a system of sprinklers, which sprinklers are commanded by valves at the stage-door, and are always ready. Thus, while the auditorium is entirely fire-proof, the stage can be deluged, at a few moments' notice, with a perfect sheet of water, entirely preventing the spread of fire. The stage wood-work is all coated with fire-proof paint. The ironwork is so arranged that it stands alone, the whole being tied together with steel anchorages and bars. The ironwork is then cased with concrete, this being again topped with Eureka concrete, while the under portion or any part which still remains exposed is cased in plaster. The auditorium and stage are both separately ventilated by direct exhausts in the roof of each. The stage is divided from the auditorium by the proscenium, being closed by an asbestos fire-proof curtain. The whole of the building is lighted by electricity, which is supplied by the Sir Coutts Lindsay Company of the Grosvenor Gallery, no engines, dynamos, &c., being in the building. The theatre, both in exterior and interior, is in the Flemish style, the interior colouring being a deep brown pink and apple-green and gold, all the silk curtains and hangings being of the same colours. The seats, which are made with enamelled iron frames, are covered in the same colours, plush and brocade."

The small print by Le Keux, of which we give a reproduction, is of some interest as showing a former restoration (on paper), without the figures. In it will be seen the classical bracket before referred to, supporting the central pinnacle.

The restoration has been carried out at the cost of Mr. H. Hucks Gibbs, and under his direction, but with the assistance and advice of an eminent architect.* The carving and sculpture has been executed by Mr. Harry Hems.

Four of the figures are shown to a larger scale at the sides of the plate; on the left, the Virgin and St. Boniface; on the right, the Apostle St. John, and St. Richard.

ST. ALBAN'S SHRINE.

The shrine, of fourteenth-century date, which now stands in the centre of the Saint's Chapel, at St. Alban's Abbey, was found in fragments during the restoration in February, 1872,—some portions having been previously found in 1847. The whole of the main structure is of Purbeck marble, the vaulting and traceried panels inside being of clunch, and still retaining considerable traces of gold and colour. A notice of the shrine will be found in the *Builder* for May 4, 1872. The drawing here given was exhibited in the Royal Academy this year.

R. W. Paul.

* The architect does not wish his name to appear, for reasons which it is not our business to inquire into.

TERRY'S THEATRE, STRAND.

We give a view of this new theatre, together with a plan and section which will better explain the special arrangements which have been made for exits, and to which we have already referred.

The architect sends us the following description of the arrangement and construction of the house, which has already appeared in nearly the same words in some of the daily papers, but which we may usefully repeat here in immediate connexion with the illustrations:—

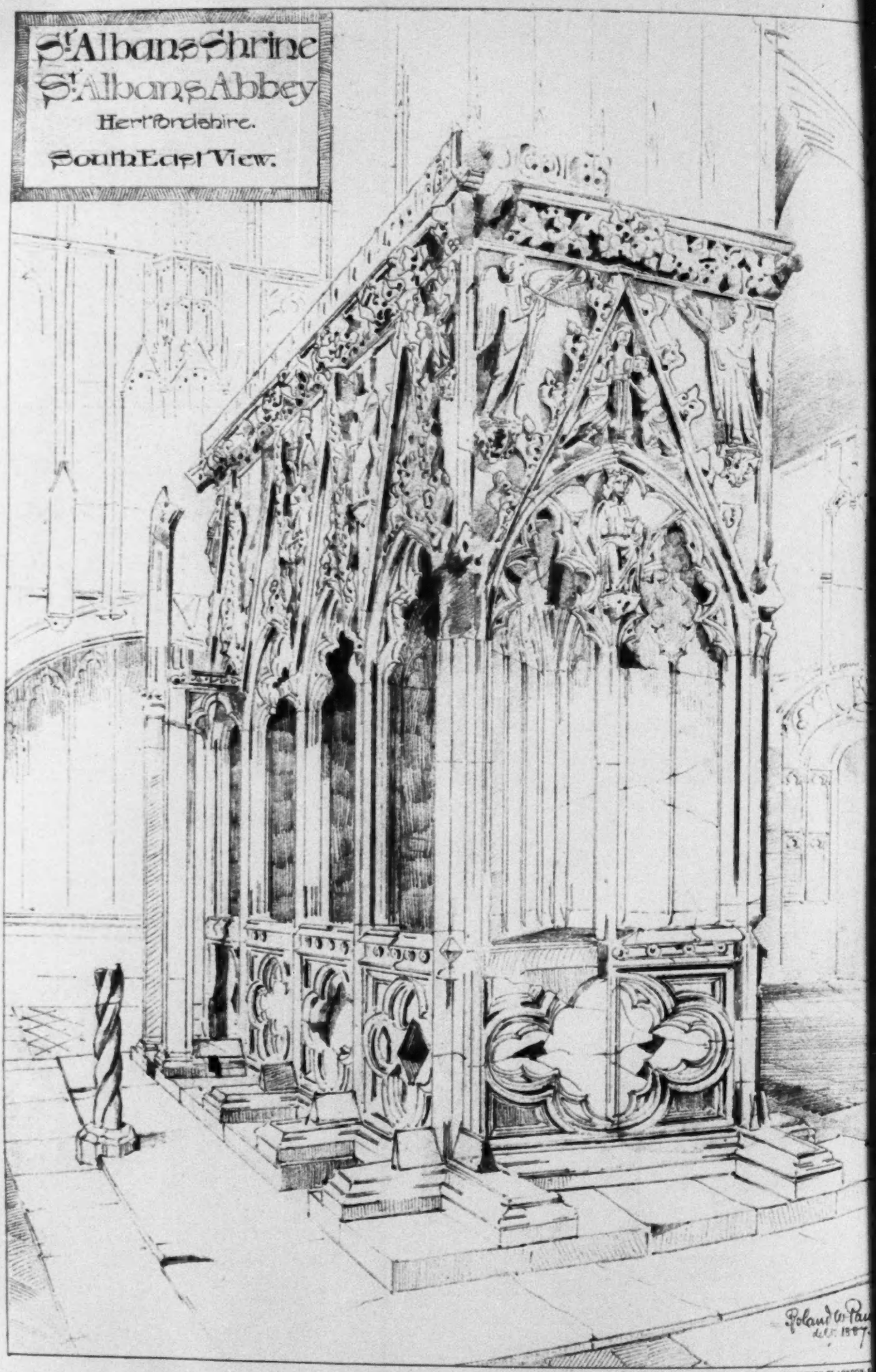
"The main entrances to the dress circle, stalls, and boxes are in the Strand, the extra gallery exit being also in the Strand. The extra exit to the dress circle is in Savoy-buildings, as are both the pit entrances, extra exit, and the gallery entrance. There are three tiers, pit and stalls, balcony and dress circle, and gallery and upper boxes. Each part of the house has two or more exits. The total exit accommodation is, according to the regulations of the Board of Works, equal to 3,500 people, while, as before stated, the holding capacity of the theatre is only 800 persons. The whole, including the roof, is constructed of concrete and iron, no wood being used in the auditorium, except for doors and windows, while all the necessary woodwork before and behind the curtain is coated with Sir Seymour Blane's fireproof paint. A thorough system of hydrants in the best available positions is placed both before and behind the scenes, a hydrant being in each circle, one on each side, while the whole of the stage and flies, both above and below, are dominated also with a system of sprinklers, which sprinklers are commanded by valves at the stage-door, and are always ready. Thus, while the auditorium is entirely fire-proof, the stage can be deluged, at a few moments' notice, with a perfect sheet of water, entirely preventing the spread of fire. The stage wood-work is all coated with fire-proof paint. The ironwork is so arranged that it stands alone, the whole being tied together with steel anchorages and bars. The ironwork is then cased with concrete, this being again topped with Eureka concrete, while the under portion or any part which still remains exposed is cased in plaster. The auditorium and stage are both separately ventilated by direct exhausts in the roof of each. The stage is divided from the auditorium by the proscenium, being closed by an asbestos fire-proof curtain. The whole of the building is lighted by electricity, which is supplied by the Sir Coutts Lindsay Company of the Grosvenor Gallery, no engines, dynamos, &c., being in the building. The theatre, both in exterior and interior, is in the Flemish style, the interior colouring being a deep brown pink and apple-green and gold, all the silk curtains and hangings being of the same colours. The seats, which are made with enamelled iron frames, are covered in the same colours, plush and brocade.

The architect is Mr. Walter Emden, assisted by Mr. George Harrison, C.E., as to the hydrant and water arrangements. The contractors are Messrs. Holliday & Greenwood. The iron-work is by Messrs. M. T. Shaw & Co.; and the water apparatus by Messrs. Rose. The carton-pierre has been executed by Messrs. Battiscombe & Harriss, and the furnishing by Messrs. Atkinson; while the tile decorations have been executed by Messrs. Doulton. Mr. E. Bell has executed the painted decorations; Mr. Rust is doing the mosaic paving; Messrs. Vaughan & Brown have executed the gas-fittings, and Messrs. Verity Bros. the electric light fittings. Mr. S. M. Egan has acted as clerk of works.

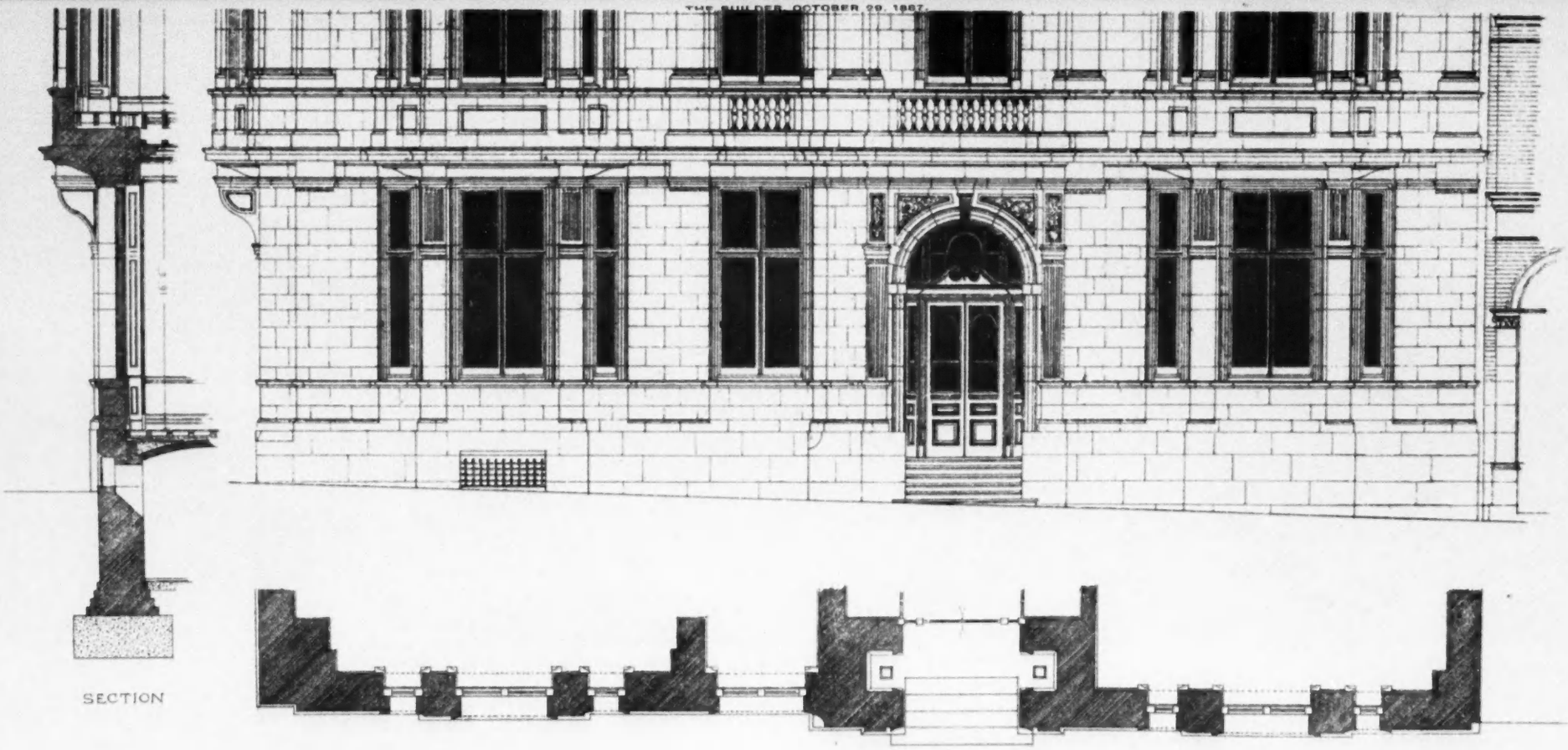
THE NEW UNION CLUB-HOUSE, NEWCASTLE-UPON-TYNE.

This building, of which we publish an illustration, stands upon a plot of ground extending 130 ft. in Rosemary-lane, by 71 ft. in Westgate-road. It adjoins the neighbouring buildings in Westgate-road, and is bounded by Rosemary-lane and St. John's Church on the west, and by new premises on the north. The principal façades are in Westgate-road and Rosemary-lane. These fronts of the building are enriched with oriels thrown out on the first floor, and with balconies and other highly effective ornamental features. The building is constructed

St Albans Shrine
St Albans Abbey
Hertfordshire.
South East View.



INK PHOTO. SPRAGUE & CO. 22, MARTINS LANE, CANNON ST. LONDON.



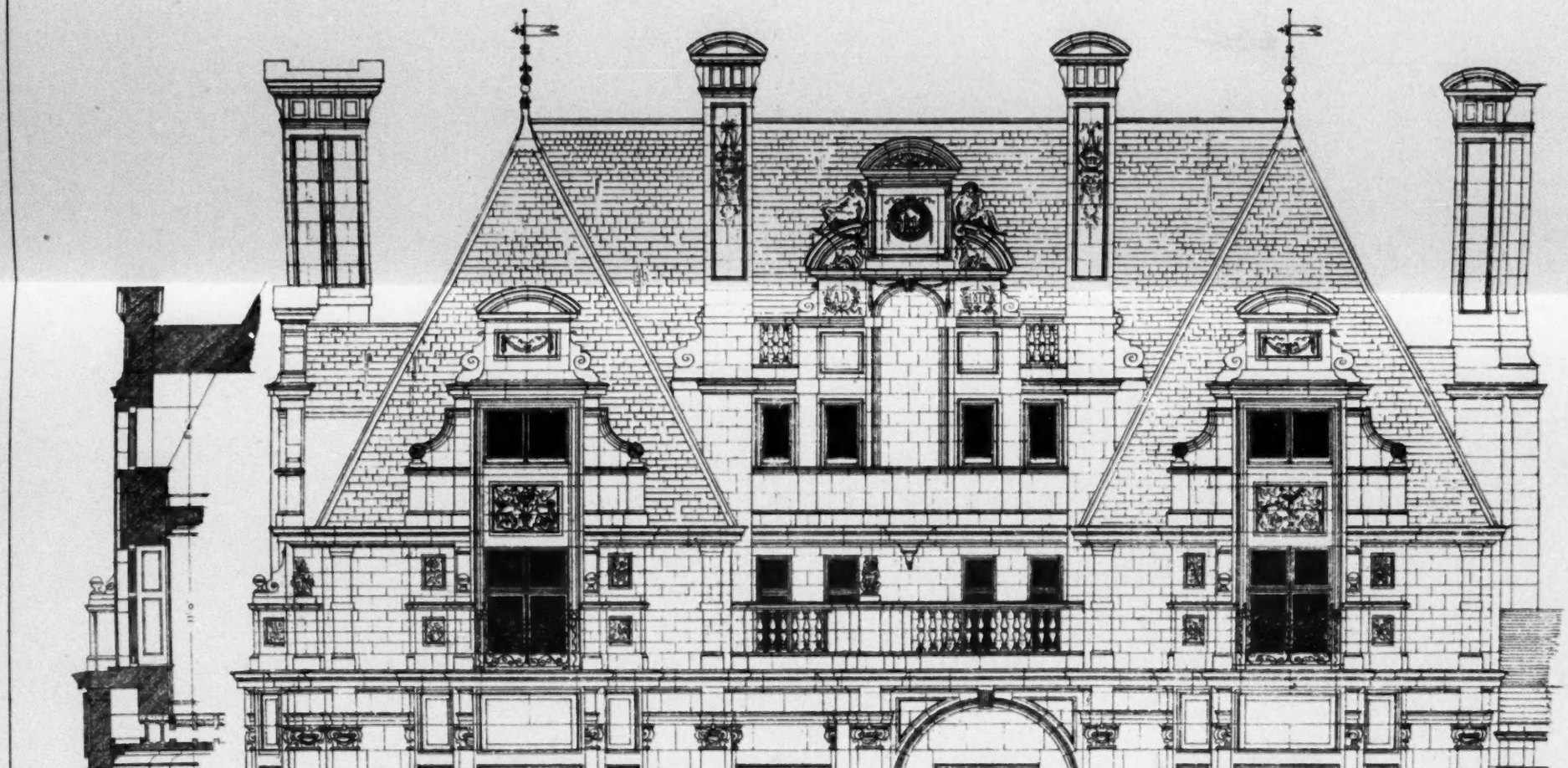
SECTION

ELEVATION OF THE SOUTH FRONT

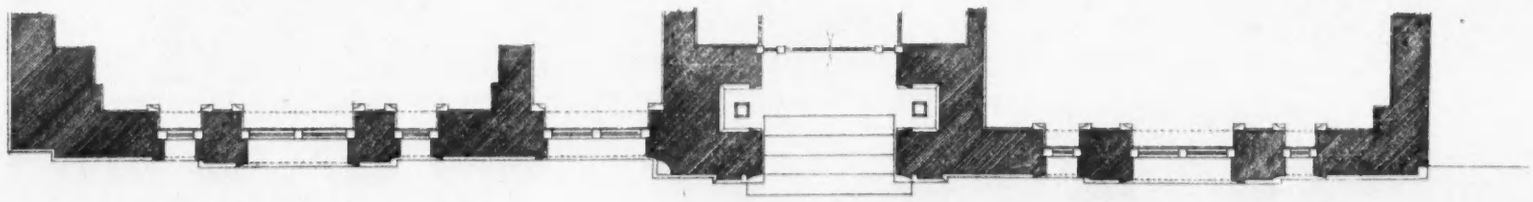
C. F. KELL, PHOTO-LITHO.

8, FURNIVAL ST. HOLBORN, E. C.

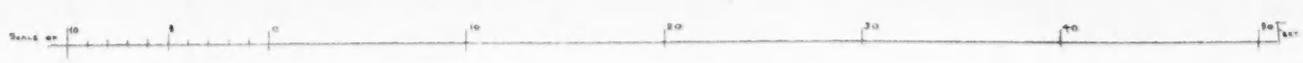
THE NEW CLUB HOUSE, NEWCASTLE-UPON-TYNE.—Mr. M. P. Manning, A.R.I.B.A., Architect.



SECTION

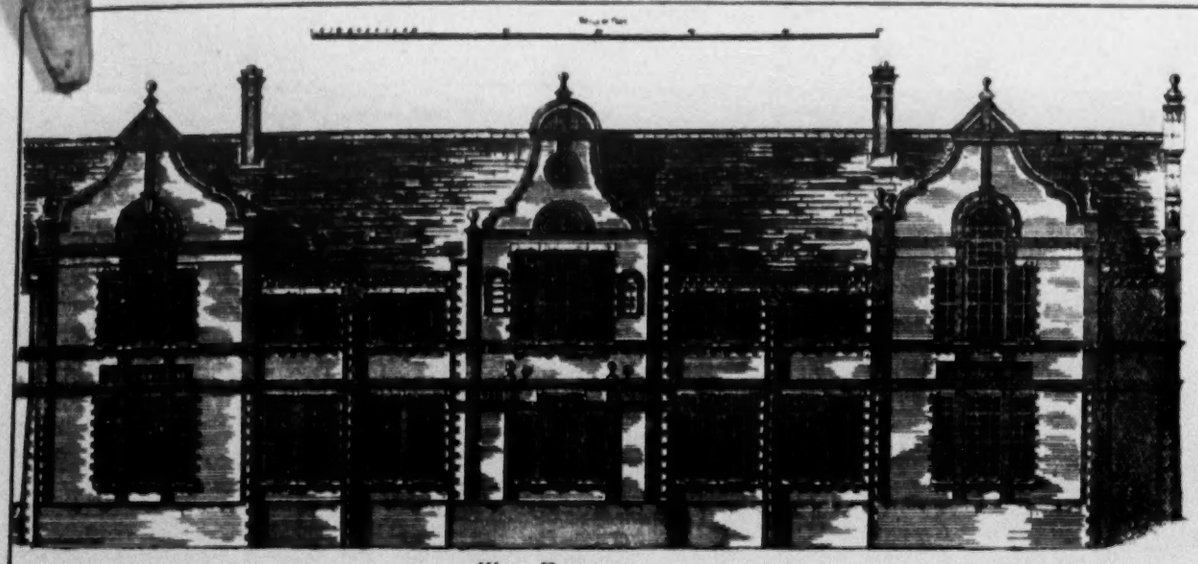


ELEVATION OF THE SOUTH FRONT

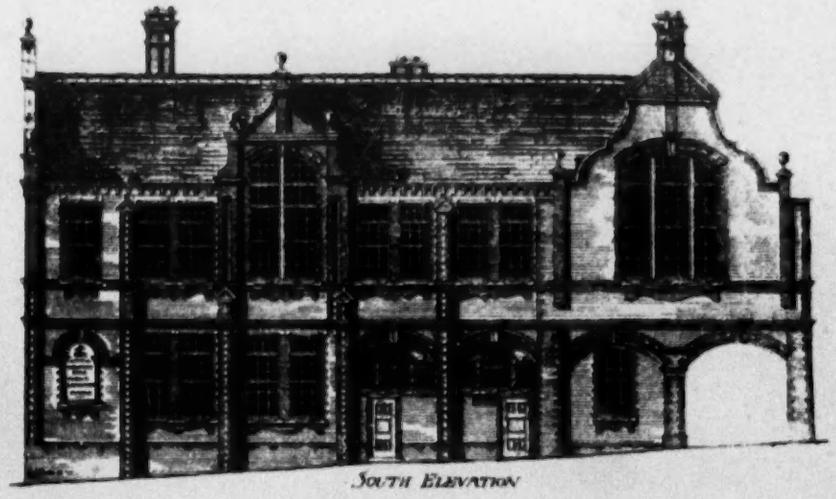


C.F.KELL, PHOTO-LITHO. 8, FURNIVAL ST HOLBORN, E.C.

THE NEW CLUB HOUSE, NEWCASTLE-UPON-TYNE.—Mr. M. P. Manning, A.R.I.B.A., Architect.



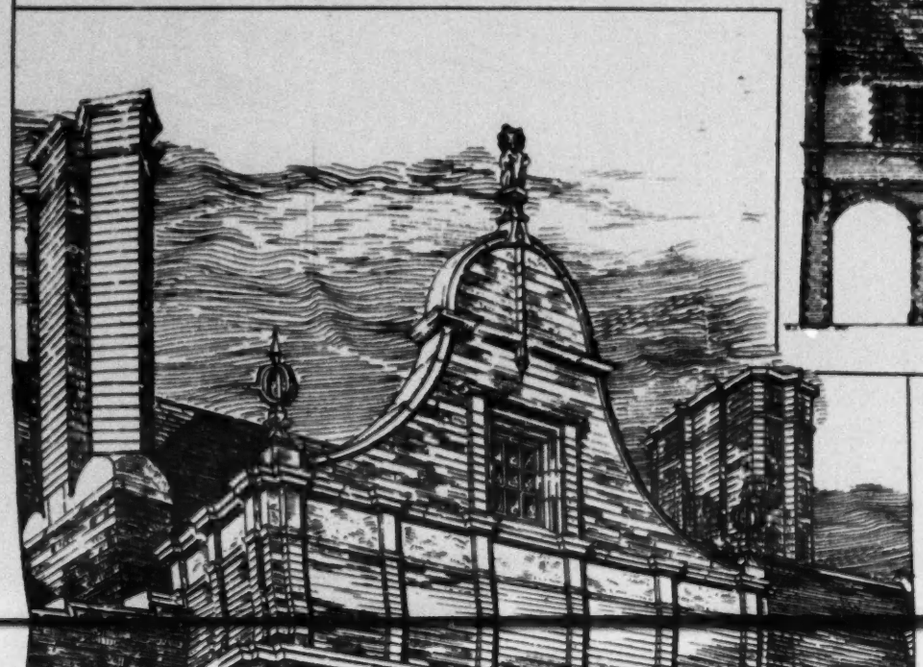
West Elevation

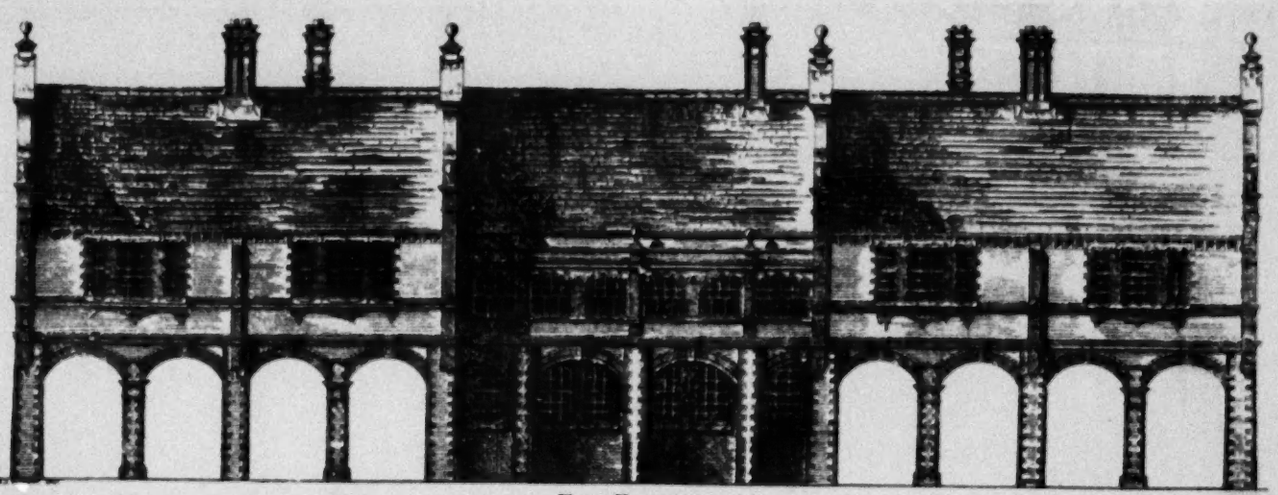


South Elevation

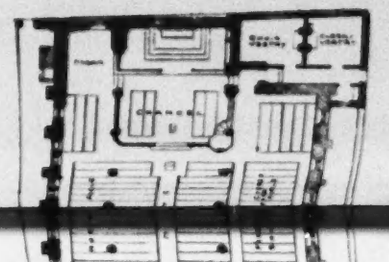
NEWPORT ROAD SCHOOLS, FOR THE LEYTON SCHOOL BOARD.

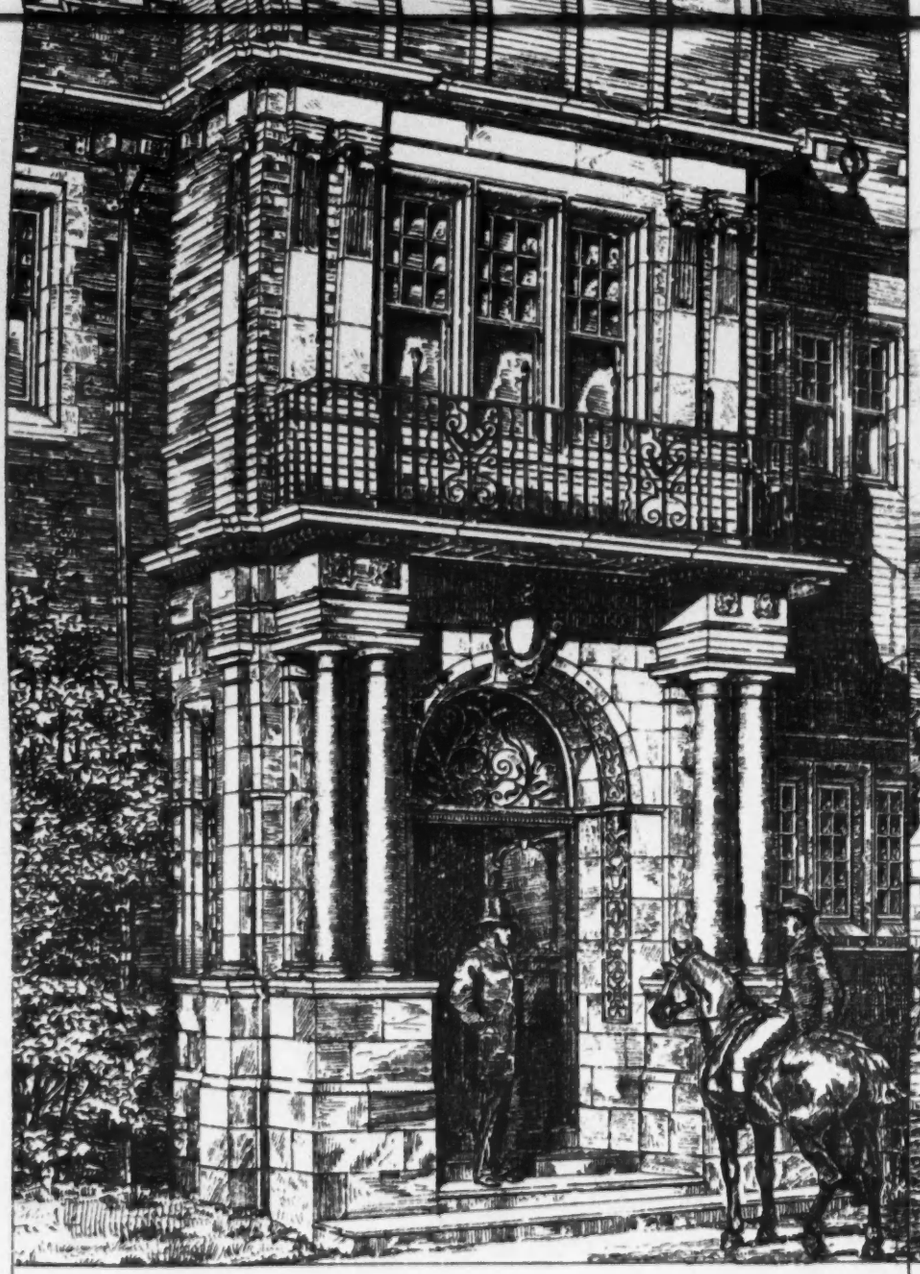
Mr. J. T. Newman, Architect.



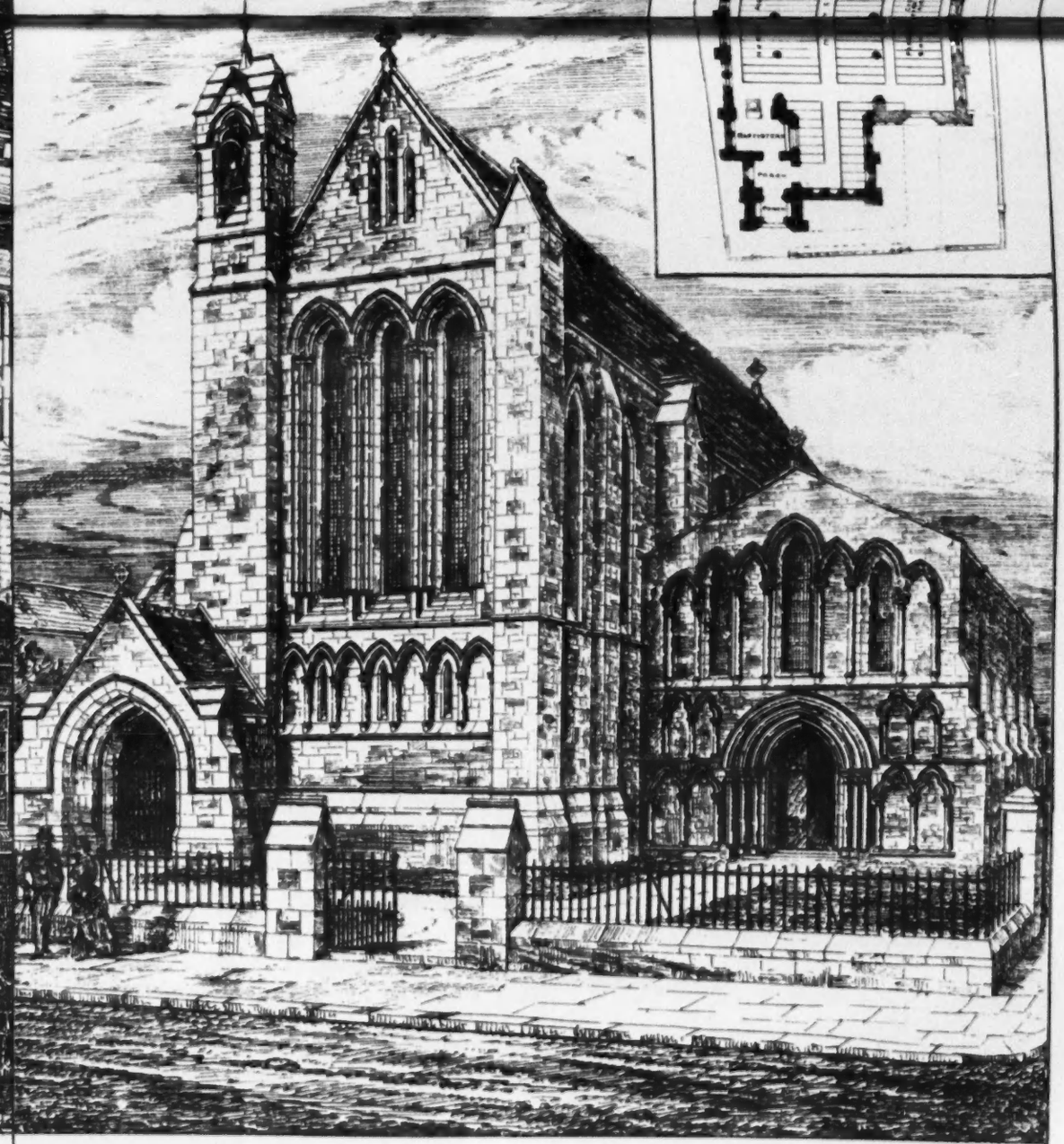


East Elevation





"EDDESBURY," NEAR LIVERPOOL.—Mr. J. Francis Doyle, Architect.

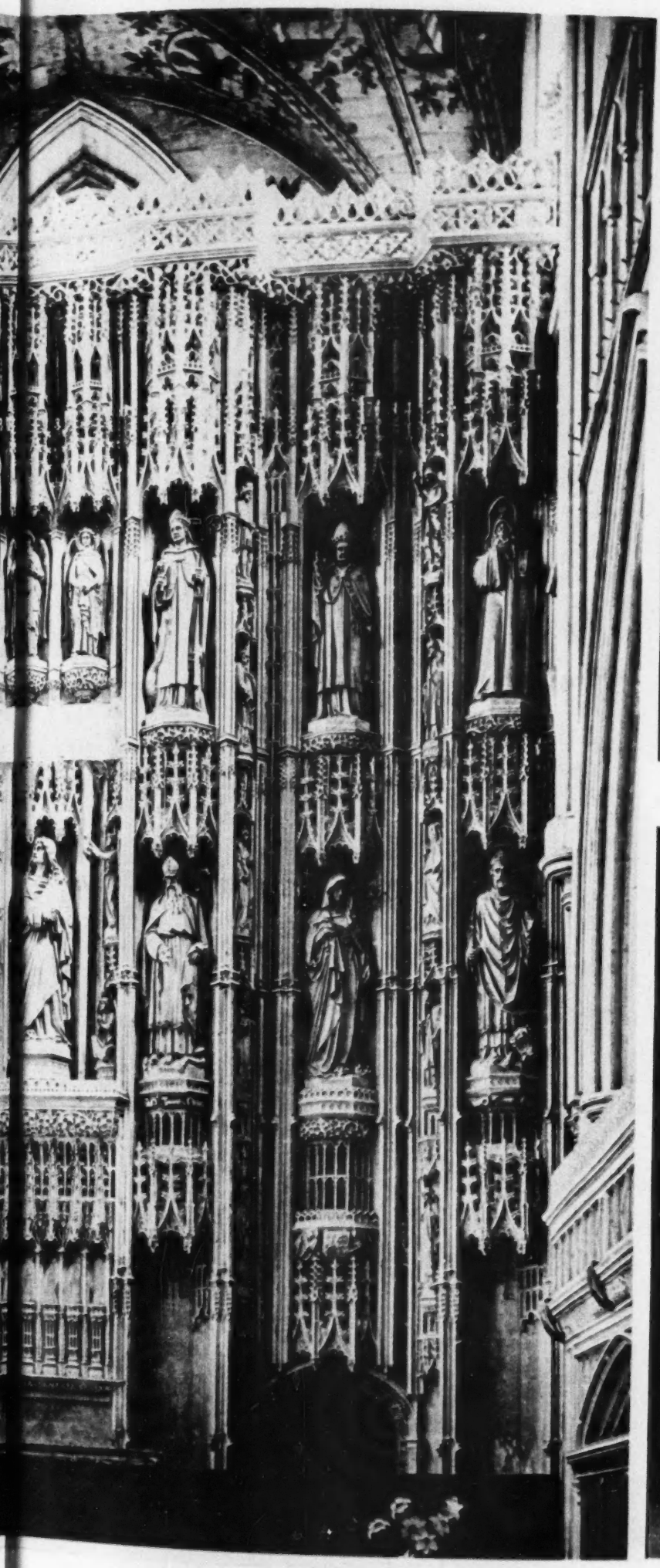


HOLY TRINITY CHURCH, GATESHEAD.—Messrs. Oswald & Son, Architects.

Wyman & Sons, Printers, 74 to 76 Great Queen St., London, W.C.

ST. ALBAN'S SCREEN, RESTORED.—Scu

The Phototype Co., 86, [illegible]rd, Lon



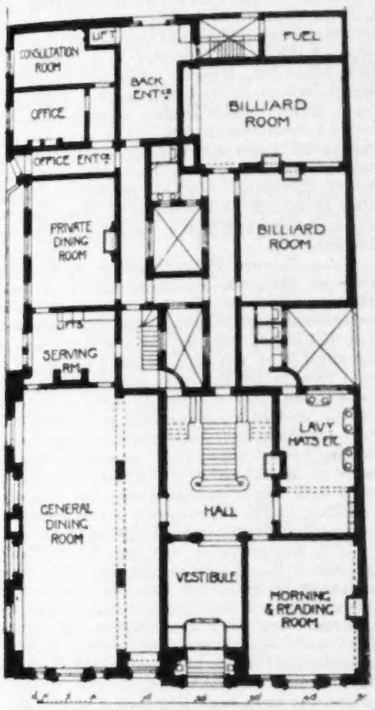
Sculpture by Mr. Harry Hems.

"TERRY'S THEATRE," STRAND.—Mr. W. Emden, Architect.

in Prudham stone, and stands upon a plinth of grey Aberdeen granite.

The ground-plan shows the arrangement of the building. On the first floor are the drawing-room, smoking-room, and other principal rooms of the club-house. On the second floor a few bedrooms; with the necessary dressing and bath rooms, and above, the usual domestic offices and servants' apartments.

The kitchen, with its offices and accessories, are in the upper story of the wing extending down Rosemary-lane.



The work throughout has been executed by Messrs. Shaftoe & Barry, of York, who were the contractors for the building. The warming and ventilating arrangements are by Mr. W. W. Phipson, the ornamental plastering by Messrs. Jackson & Son, the kitchen fittings by Messrs. Clements, Jeakes, & Co., the stained glass and ornamental glazing by Messrs. Powell & Son, the marble mosaic pavements by Messrs. Burke & Co., and the gas service and fittings by Messrs. Stevens & Co., and Messrs. Barkentin & Krall, all of London. The marble chimney-pieces were supplied by Messrs. Walker & Emley, and the stoves and grates by Messrs. Mather & Armstrong, of Newcastle, who also fitted up the system of pneumatic bells. The contract for the whole of the furniture, which has been designed in harmony with the building, has been executed by Messrs. Robson & Son, of Newcastle. Mr. G. C. Davies acted throughout as the architect's clerk of works.

NEWPORT-ROAD SCHOOLS, LEYTON.

These schools, affording accommodation for 1,040 children, in three departments, have been erected at Leyton, Essex, for the Leyton School Board, from the designs of Mr. J. T. Newman, architect, at a cost, inclusive of caretaker's house, boundary-wall, &c., of 7,910*l*. The works have been carried out by Mr. James Morter, builder, of Stratford, E.

PRINCIPAL ENTRANCE, "EDDESBURY."

The illustration is the principal entrance of "Eddesbury," the residence of Mr. James Latham, situate in "West Derby," near Liverpool. The house is built of red Ruabon brick and red Runcorn stone. The roof is covered with green slates from the Tilberthwaite quarries. A considerable part of the internal fittings and finishings is of oak. The architect is Mr. J. Francis Doyle, of Liverpool.

HOLY TRINITY CHURCH, GATESHEAD.

The design illustrated this week, by Messrs. Sept. Oswald & Son, architects, of Newcastle-on-Tyne, was selected in limited competition.

The design is really for the enlargement of the existing church, which will be utilised as the south aisle of the new edifice. Its west front, shown on the exterior view, is ancient, dating from 1248, and will be preserved absolutely intact. The remainder of the present church, which was restored and re-roofed about fifty years ago, will be interfered with as little as possible, an arcade being substituted for its north wall. The pillars and arches of this arcade are spaced so as to leave the old roof, with its wall posts and corbels, exactly as at present. This roof, although of a different style from the rest of the building, is internally of graceful form, and its retention seems desirable for many reasons. The western gallery will be taken away, displaying internally the full proportions of the window, now partly hidden. With these exceptions, the present edifice will be left practically unaltered.

The walls of the church will be built of local stone, plastered internally, unless (as is hoped) funds are forthcoming to line the interior with stone, which is very desirable, especially in the chancel and nave. The roof timbers will be of pitch pine, left the natural colour, without stain or varnish. The church will be seated with chairs for about 600 persons. The furnishings of the chancel may have to be temporary in the first instance, but will be added gradually as adequate funds become available for permanent reredos, choir-stalls, chancel-screen and gates, lectern, pulpit, &c., of suitable architectural character.

It may be noted that tradition affirms the site of this church to be that of a Saxon monastery, of which records prove the existence prior to A.D. 653.

THE FIRE AT WHITELEY'S.*

The inquest as to the death of the four persons killed by the fall of the wall at the time of the fire at Whiteley's in August last was resumed and concluded on Monday, before Dr. Danford Thomas, Coroner for Central Middlesex.

Mr. Charles Robert Walker, C.E., of Great Queen-street, Westminster, said that on the 26th of August he received instructions from the Coroner to examine Mr. Whiteley's premises, with a view to ascertain the construction of the ironwork, the relation of the ironwork to the brickwork, and the expansion of the iron under great heat. He had to report that the factory in Douglas-place was a building about 80 ft. from east to west, and 72 ft. from north to south (or facing Douglas-place). It consisted of four floors and a ground-floor,—five in all. The height from the ground to the upper ceiling was about 55 ft. The first floor was said to be a "fire-proof" floor, and all the others were strong wooden floors supported on iron girders. The ceilings were of match-boarding, and the joists appeared to be very strong, and closely laid together, so that the girders were thoroughly sandwiched between timber, which at the time of the fire would be very dry. The iron girders were supported by columns extending from the basement to the roof, except in one case, where a partition wall was carried to the first-floor level, and columns were carried from the level of that wall to the roof. There were three tiers of girders and columns extending from the basement to the roof, and one tier extending from the first floor to the roof. In the provision-shop in Douglas-place, a building of four stories and ground-floor, about 150 ft. long, and varying from 30 ft. to 40 ft. in width, the floors were carried in a similar way; the ground-floor was a "fireproof" floor. Girders were largely used in other portions of the building in connexion with woodwork, and in some cases in connexion with "fireproof" flooring, but the girders generally were isolated, and ran parallel to the street. With regard to the construction of the ironwork, in the factory in Douglas-place the girders carrying the floors were rolled iron joists, 12 in. by 6 in., weighing about 56 lb. per foot. They were in lengths of about 16 ft., and were carried on four cast-iron columns. The ends of the girders were bolted to the columns, different methods of connexion being adopted,—one on the ground-floor, another on the first floor, another on the second floor, another on the third and fourth floors. All those methods of connexion had the same effect, namely, that of securely bolting the girders through the column to each other, or making one continuous girder of the whole length, the ends of which continuous girder were in the wall. The columns varied in diameter (the stronger being at the bottom), and were bolted together vertically, so that the girders with the columns formed three frames about 76 ft. long by 66 ft. high. The fourth frame rested upon the partition wall carried to the first-floor level, and was therefore about 76 ft. long by 46 ft. high. The first or "fireproof" floor consisted of rolled iron joists, 8 in. by 4 in., laid at right-angles to the large girders, and the ends of those joists rested on the wall before mentioned. That wall also supported one end of the short joists carrying the other portion of the first floor. In this floor there were two main girders side by side instead of one, as in the other floors, in order to obtain additional strength for the heavy floor. At the time of his inspection, none of the girders remained fixed to the columns, so that his examination did not show whether they were closely bolted together or not, but he had every reason to believe that they were closely bolted together. The girders in the provision-shop in Douglas-place remained intact at the time of his inspection: they were securely bolted to the columns. There was no allowance whatever for expansion or lateral play; in fact, it might be said in both cases that the walls were tied together by means of girders. With regard to the relation of the ironwork to the brickwork, at the time he made his examination one girder only remained in the western wall of the factory; that girder was bent at right angles about 3 ft. from the wall, and stood in that position. There were five holes in the brickwork from which the girders had fallen. In one of those holes, where the first-floor girder had been, there was a clear impression of the girder on the brickwork at the back of the hole. The hole was about 6 in. deep. Two other holes on the first-floor level were of about the same depth, and the two holes at the level of the second-floor girders were about 7 in. or 8 in. deep. In the western wall seven girders remained fixed, two of which, however, were supported by columns, and five hung from the wall, one girder standing out horizontally from the wall. He could see three holes from which the girders had fallen; these appeared to be about 14 in. deep, and judging from the appearance of one he should think that there was a pocket or space at the back of the end of that girder. As both the girders in the east and west wall remained standing firmly in the wall, he concluded that they were closely and firmly built in, or they could not possibly have remained in such a position. It was not possible for him to have any of the brickwork round these girders cut away at the time when he made his first examination. He endeavoured to arrange to see the girders when the men were pulling down the wall; he was unable to do so, but from his examination of the girders after they were taken down they appeared to have been firmly built into the brickwork. He also found that one of the girders on the ground-floor level in the east wall was firmly built in the brickwork, and that the bricks actually touched the back of the girder. In the provision-shop in Douglas-place he was able to examine a number of girders when the wall was being pulled down, and they were built into the brickwork. He had an interview with Mr. Saunders, the architect, who kindly afforded him full information, and went through the detail drawings of the destroyed building with him. Mr. Saunders informed him that "pockets" were not mentioned in the specification, but that instructions were generally given to keep the ends of the girders clear. Mr. Saunders also showed him details of the ironwork, from which he was able to distinctly state that there was no allowance or provision for expansion at the connexion between the girders and columns, except such small play as there might be between a ¾ in. bolt passing through an inch hole in the lug on the column and through a ¾ in. hole in the girder, and that was assuming that the ends of the girders did not butt against the column. On the 30th of September, having arranged with Mr. Saunders to meet his assistant, Mr. Point, he had two holes cut in the brickwork at the back of two of the girders. He found in one case the brickwork built close up to the back of the girder; in the other case a very small space was left, but not a "pocket." In the case of two heavy girders in other parts of the building he found that there was a pocket at the back of the girder, but in all cases the girders were built around and securely to the wall at the face. He felt bound to say, how-

* See *Builder*, p. 580, *ante*.

ever, that Mr. Point, Mr. Saunders's assistant, told him that if any "pockets" were left it was by accident and not by design. With regard to the question of the expansion of iron under heat, in ordinary temperature the expansion was so slight that in building little heed need be paid to it. But the expansion increased in direct ratio to the temperature, and up to 200° Fahr. it was about one eight-hundredth of the length. It was, therefore, necessary to endeavour to ascertain the temperature of the girders during the fire. A great quantity of melted lead was found in the factory, and he had also seen a piece of metal consisting of part of a girder, part of a column, part of a steam-pipe, and other pieces of iron, partially melted and fused together, so that the temperature must have been very great. Many of the girders must have been red-hot, as was, indeed, quite clear from the red scales upon them. In such a case the expansion would be $\frac{1}{12}$ in. or even $\frac{1}{8}$ in. per foot of girder. In the case, therefore, of what was practically a continuous girder 80 ft. long, the expansion would be 6 in. or 8 in. over all. It was then necessary to consider how much of that expansion would be communicated direct to the ends of the girders. Rolled iron joists were not very stiff laterally, and in expanding they would probably buckle and arch somewhat, especially as the girders were fixed at the ends. On the other hand, the fact that the columns were bolted together, and that the floors would rest on the girders during the early part of the fire, would help to keep the girders from buckling. He did not think that the whole of the expansion could have gone to the walls, but he believed that about 2 in. of that expansion would be communicated to each end of the girders and against the walls. Though the resistance offered by the ends of the girders being firmly built into the walls might tend to increase the buckling, buckling so caused would not lessen the strain upon the walls. In his opinion the expansion of the girders caused considerable outward thrust upon the walls, and as the ends of the girders were not absolutely free, that expansion would tend to push the walls over. In a small building near the factory, called the "stables," he noticed two rolled iron joists about 30 ft. long had thrust and bulged outwards the brickwork near their ends. He believed that was due to the expansion of those girders under great heat. The bolts which he produced would show that there had been very great expansion in the girders. A short bolt which must have connected a third or fourth floor girder to a column had been bent as with a hydraulic press, the depth from the head to the bend exactly corresponding with the thickness of the lug on the column and from the nut to the bend with the thickness of the web of the girder. In his opinion, that bolt had not been bent by the fall of the girder, like another bolt produced, which showed the manner in which it had been wrenched by the falling of the girders. Two long bolts (produced), which had come from a second-floor girder, also showed evidence of expansion in the girders. In addition to the iron girders in the factory, there was a considerable amount of shafting running both parallel to and at right angles to Douglas-place. It was urged that the north wall of the factory also fell into what is called "Whiteley's-mews," and that there were no girders in that wall. The ends of the short rolled iron joists which carried the fireproof floor were said to be in the north wall, and those joists might have communicated the expansion of the longer cross-joists to the wall. The ends of the strong wooden joists carrying all the floors were also in that wall, and when the main girders carrying the joists fell, the joists falling might have overthrown the wall. Iron, when used in a building, could only expand to the extent stated when submitted to great heat, as in a fire. The ends of the girders being firmly built into the walls, the expansion of the girders would cause an outward thrust upon the walls,—already weakened by the heat of the fire; and such thrust did, in his opinion, afford a reasonable explanation of the falling of the walls. The walls were well built, and the brickwork was very good indeed. He had no desire to find fault with the building. He believed the ordinary method of construction had been observed, and that there were many buildings similarly constructed.

In answer to questions put by the Foreman of the Jury (Mr. Mark H. Judge), Mr. Walker said that before he had seen the results of this fire, he should probably have built the warehouse in the same way. He could not give any other explanation of the fall of the wall except that it was due to the pushing force exerted by the expansion of the girders. Asked whether the walls of a building ought to be tied together by iron girders, and whether iron girders ought to be built tight into the walls, Mr. Walker said where the girders were meant to carry wood floors he would make special provision for the expansion of the girders, but in fireproof floors he did not think that would be necessary.

Mr. W. B. Lewis, M.Inst.C.E., was the next witness. He said he had had experience in iron and brick construction, and that the building which was the subject of inquiry was constructed in the manner usually adopted for such buildings. He could not agree with Mr. Walker in thinking that the expansion of the girders had much to do with the falling down of the wall. The wall was, no doubt, subjected to very great heat. He thought that the tendency of the girders would be to pull the walls in rather than to push them out, but he should attribute the weakening of the walls to the heat to which they were exposed, apart from the girders altogether. In common structures like the one under inquiry it was not usual to make any allowance for the contraction or expansion of the ironwork.

By the Foreman of the Jury.—The expansion and contraction of iron under ordinary temperatures was so slight that it was not necessary to make any special provision for it. In other words, it was only usual to provide for safety in such structures under ordinary circumstances. This was not a "fireproof" building, and therefore no special means would be taken to protect the ironwork, notwithstanding that ironwork in the presence of fire was an element of danger rather than of security.

By Mr. Roche (representing Mr. Whiteley).—His belief was that a girder 12 in. by 6 in. would buckle and twist by the heat long before it could exert any effect upon the wall.

Mr. F. W. Shields, M.Inst.C.E., said he had had considerable experience in iron construction, and his opinion was that the iron girders had practically no effect upon the falling of the wall. He thought that the wall fell owing to the operation of an ordinary law of nature. The heat inside the building expanded the wall, which was cool on the outside, and this difference of external and internal temperature caused the wall to buckle, without any pull or thrust from the girders.

By the Foreman of the Jury.—He should, if this had been his own building, have built the girders solidly into the brickwork, for the reason that the girders supporting the various floors of a building were needed for use also as ties from wall to wall. He did not think that the wall could have fallen from the thrust of the continuous length of girder through the application of heat at a distance from the interior face of the wall. Did not know that the wall fell within a very few minutes of the alarm of the fire having been given, and before the fire had itself reached the inner face of the wall. Did not know that immediately the wall fell upon the people whose lives were lost, the firemen who set to work in removing the *débris* found that the bricks were not too hot to handle, as they would have been had the wall fallen owing to the direct action of heat.

By the Coroner.—The brickwork was very good.

Mr. T. Chatfeild Clarke, F.R.I.B.A., said that as surveyor to a large fire office he had had considerable experience of the behaviour of buildings under fire. He had looked at the drawings, plans, sections, &c. of the destroyed warehouse, as erected from the plans of the architect, Mr. J. E. Saunders, and as the result of the examination he was prepared to say that if he (witness) had had to construct the building, with its particular requirements, he should have constructed it in exactly the same manner as that adopted by Mr. Saunders. As to the strength of walls, that was a matter which was regulated by the Metropolitan Building Act. It was the universal practice to make use of cross girders as ties from wall to wall.

In answer to a question by the Foreman of the Jury, Mr. Chatfeild Clarke said he did not consider that the expansion of the girders was an appreciable factor in the destruction of the wall, and therefore he should not be disposed to alter the construction on that score.

Mr. J. Tavenor Perry, A.R.I.B.A., said that as surveyor to a fire insurance office, and as architect to the Alhambra in Leicester-square, he had had much experience in connexion with the effects of fire upon iron construction, and he had found, in buildings erected as the one under inquiry was, with the iron girders built in as ties, that the tendency of the ironwork was not to expand and force the walls out, but rather, by the sagging of the girders under the action of heat, to drag the walls inwards, the girders sometimes falling inwards from that cause without pulling the walls with them. A case of that kind happened at the burning of the Alhambra, when a large built-up girder, about 50 ft. long by 4 ft. 6 in. deep, which had been put in about twelve months before to carry a considerable part of the weight of the dome, fell inside the building, leaving the walls which carried it intact. That girder rested on stone templates. In his experience, when iron subjected to the action of heat began to expand appreciably, the tendency was to sag immediately.

Mr. J. Howard Colls, President of the Institute of Builders, was next called. He said that as a builder of much experience in the erection of such buildings as the one which was the subject of inquiry, he had never seen it specified that the ends of the girders were to rest free in pockets with room for expansion. It was the usual practice to build in the ends of the girders most carefully, and where that was not done the work would be regarded as having been "scamped." It was most necessary to make use of the girders as ties. If they had not been built in in this particular building, he did not believe it would have stood to be burnt down: it would have fallen down.

The next witness was Mr. E. H. Wallis, M. Inst. C.E. Examined by the Coroner, he said that he could not but conclude, from his examination of the plans, that primarily the girders, from their construction and disposition, had, when expanded by heat, exercised considerable effect in pushing out the walls. In the total length of 80 ft. the expansion would not have been less than 3 in. or 4 in.,—say, 1½ in. or 2 in. at each end. That might not seem much, but acting on a wall possibly already weakened by the action of fire, it might easily be sufficient to push a wall over.

Captain Shaw, the Chief of the Metropolitan Fire Brigade, was the last witness called. In answer to questions put by the Coroner, he said that while his experience showed that many walls were crippled and weakened by heat, irrespective of the disturbing element of iron construction, there could be no doubt that the expansion and perhaps the contraction of iron was a frequent source of the collapse of buildings attacked by fire. What might have been the precise sequence of causes in regard to the fall of this building he could not say; but it was his experience that, as a rule, the walls of buildings in which the floors, &c., were of wood, stood longer under fire, and more often survived fire, then the walls of buildings in which iron construction was used.

The Coroner having summed up the evidence, the jury retired to consider their verdict. After being absent for about half an hour, they returned the following verdict:—

"That the four deceased persons were found dead and did die from the mortal effects of fractures of the skull and other injuries, arising from the falling of a wall at a time when there was a fire at Mr. William Whiteley's. Although there is not sufficient evidence to show how the fire originated, yet we are of opinion that it was the work of an incendiary or incendiaries."

To this verdict they desired to append the following rider:—

"First, that the present state of the law in regard to fires is most unsatisfactory, inasmuch as it would have allowed the fire at Mr. Whiteley's premises to have passed without any official inquiry but for the deaths resulting therefrom.

Secondly, that provision should be made by law for an official inquiry into the origin and circumstances of all fires.

Thirdly, that such an inquiry would tend to diminish the frequency of fires, by making felony more easy of detection and by bringing public censure, if not punishment, on persons responsible for fires arising from carelessness or want of precaution.

Fourthly, that the information and statistics which would result from fire inquiries would expose faulty and inferior work and thus lead to improvements in building constructions.

Fifthly, that the serious danger which may result from unscientific construction where ironwork is largely used calls for immediate attention, with a view to such an amendment in the Building Act as will secure the requisite supervision."

CASE UNDER THE METROPOLITAN BUILDING ACT.

NEGLECT TO GIVE NOTICE TO DISTRICT SURVEYOR.

At the Worship-street Police-court a few days since, before Mr. Bushby, the District Surveyor for East Hackney North (Mr. Meeson) summoned Messrs. Brooke, Simpson, & Spiller (Limited), for penalties for having executed works to four buildings without notice.

Defendants' counsel objected that the summons was addressed to the old firm instead of the present company, but the District Surveyor produced a letter from the company on the subject of the summons, and the summons was amended by the addition of the word "limited." The defendants claimed exemption under section 6, contending that the clause was to be construed as "60 ft. from the nearest buildings (and ground) of an adjoining owner."

Included in one alleged offence was the repair of an external wall, in which about 100 new bricks showed on the face of the wall, and the District Surveyor considered this was a repair affecting the construction of the wall, because if the new work had been taken away the brickwork over it would have fallen.

The Magistrate decided that the context of the part of the exempting clause referred to, as well as the general policy of the Act, shut out the construction put upon it by the defendants; and as the buildings to which the works were done were within 60 ft. of other buildings belonging to the defendants, the District Surveyor was entitled to notices. The repair was not to be considered a work requiring notice, because old bricks were simply replaced by new, and there was no alteration as if stone had been substituted for bricks, or the wall had been made thicker.

The defendants were fined 4*l.* and 12s. 6d. costs.

THE WALLS OF CHESTER.

Sir,—I have to ask of you the favour to correct for me a slight error in one of my letters, in which I coupled the name of Mr. Shrubsole with that of Mr. Thompson Watkin, as believing in the Mediæval age of the Roman sculpture of two figures.

Mr. Shrubsole assures me that he has expressed no such opinion. C. Roach Smith.

Strood, Oct. 24.

Sir,—Permit me, in a few lines, to reply to Mr. Brock's last letter. I am told that if the present walls of Chester at the two points I have indicated were built, one in the time of the Commonwealth, and the other in the reign of Anne, the "bills" must be in existence, and that if I cannot produce them, "it will show that the work was not done at either of the times" I name.

As we know from Randle Holme and others that three breaches were made at different times in the walls during the siege, it follows that they must have been at some time repaired. As the great breach is well known to have been a little to the west of the Phœnix Tower, the Parliamentarian army, when they obtained possession of the city, would, as I have before said, rebuild not only this breach, but the others, to mitigate the danger of an attack by the Royalists, by whom they might at any moment be besieged. But if Mr. Brock really means *au sérieux* to ask me for the "bill" which the Parliamentarian army incurred, I may as well ask him for the "bill" the 20th legion incurred, if they built this part of the wall. In neither case would any "bill" be necessary. The soldiers and "impressed" hands would, in either case, do the work.

As to the "bill" for the work done in Queen Anne's time, if Mr. Brock does not believe the inscription put up by the Chester City Council on the completion of the work, almost immediately above the buttressing wall, which I take to be part of the work then done, I am afraid he will not believe, "though one rose from the dead" to confirm it. The inscription (which I have previously referred to in my correspondence with Mr. Brock), put up on the face of Pemberton's Parlour, tells us that in 1708 "divers wide breaches in these walls were rebuilt, and other decays therein were repaired, two thousands yards of the pavement were now flagged or paved, and the whole repaired, regulated, and adorned at the expense of one thousand pounds or upwards." Here is the amount of the "bill" for the portion executed in Queen Anne's time.

Referring to the Roodeye wall and its mortar, which Mr. Brock says is Roman, I will merely quote from the report of the City Surveyor, Mr. J. M. Jones, read at a meeting of the Chester Archæological Society, February 24th, 1884. He says (speaking of the excavation he made in front of it):—"I have not found either at the Kaleyards, *and except in two courses just level with the ground at the Roodee*, mortar in the joints." This mortar has been well examined, and it is comparatively modern. Mr. Brock speaks of the mortar below the present level having been "washed out" by the "action of the tide." He may rely upon it that if any "washing took place," it would be the soft sandstone that would yield, and not the grand Roman concrete, if it h ever been there.

Finally, he alludes to my use of the word "formidable" with reference to his calculation for labour, and the quantity of stone, &c. My contention was, and is, that if the Parliamentarians repaired the large breach, as I believe they did, the cost, even including that of "the stone," which Mr. Brock says he has omitted, would be comparatively *nil*. With stone at hand from the old ruined wall, Roman ruins, and tombstones close at hand, forced work from the army, and impressed work from the citizens, the wall could be rebuilt both very cheaply and very rapidly.

W. Thompson Watkin.

P.S.—It is, of course, quite possible that in the archives of the Chester Corporation some accounts constituting a "bill" may be found, for the repairs effected in 1708, and also some papers (though I doubt it) referring to the reparations by the Parliamentarian army. But as this would involve a long search, perhaps some of the Chester authorities will try it. As it is *certain* that repairs *did* take place at these periods, it is Mr. Brock's place to procure these "bills," if extant, and disprove the views I have argued by them.

Sir,—I will cheerfully reply to any inquiries of your correspondents relative to the interesting subject of the age of the walls of Chester; but is not Mr. Watkin making needless comments as to whether or not I am correct in calling the middle of the last and the beginning of this century, "fairly recent times"? I think I am right in doing so, but the point to be kept in mind is that two Roman gates did actually stand in the line of two of the present walls, and thus proving their course. He says [p. 582] that there is between him and me "merely the question as to who moved the stones," acknowledged by both of us to be Roman, which form the base of the wall. In this certainly lies the bulk of the discussion as it stands at present, now that the age of the ecclesiastical-looking figure may be taken as determined. For his opinion, however, that they are not *in situ*, he is bound to believe (1) that the Roman foundations where the Roman wall stood have been entirely obliterated, and the whole mass of the old walls removed, from the position mostly under notice by me, from North Gate to the Phœnix Tower, and wherever else the Roman stones occur as the base of the present wall; (2) that the base of the Kaleyards wall was built *without mortar, temp.* Edwardian; (3) that one part of the north wall was built *without mortar* in Parliamentary times; (4) that another part was built again *without mortar, temp.* Queen Anne; (5) that all the enormous mass of Roman stones was dug from convenient old Roman foundations by the Parliamentarians within the city after the siege, while all the sepulchral stones were found without the city before that event; (6) that the new base was built without mortar, and either the upper part with mortar at the same time, or else the upper part went to decay since the middle of the seventeenth century or later, and had to be rebuilt with mortar. All these improbabilities have to be faced before he can put forth any claim to substantiate his belief. All are avoided by the theory that the Roman stones are where the Romans placed them when the wall was built. I have asked him for proof; none is forthcoming. There is but your correspondent's repeated assertion. I asked him long since to point out an Edwardian building erected without mortar in support of his belief. He has not done so. I knew that he could not. Your readers are aware of the universal use of mortar in all Mediæval buildings down to our own days. Yet here at Chester, according to your correspondent, age after age must have built without it. For myself, with a somewhat extended knowledge of the technicalities of building construction, I cannot point to a single instance of any Mediæval building in England erected without mortar.

The mere fact, however, of the absence of mortar is, of itself, evidence of high antiquity, and it is surprising that it is not so accepted by your two correspondents. The whole mass of the walling of ancient British hill forts, from Cornwall to Northumberland, from the borders to the extreme end of Scotland, from end to end of Wales, in Ireland, on the Continent, in all these the absence of mortar where walling occurs is universal.

These walls are built of stones far smaller than anything I have seen at Chester, and they still stand in many examples. I have already referred to the feeling for the use of unmortared masonry by the Romans, and your correspondent's rejection of the evidence of Continental examples will not be followed, I feel sure, by the majority of your readers.

Mr. Shrubsole, p. 581, still doubts my measurement. This can readily be determined. I hope to be at Chester shortly, and shall be very happy to meet him, if he will let me, and have a pleasant visit to the spot. We can there measure it together. His belief as to the poorness of the erection of the unmortared part of the wall, I think, carries its own refutation with it, for if erected as he states, it would certainly not stand. But it does stand. It must be remembered that the earthen supporting bank does not exist along a large portion of the wall, and where it is highest.

The height I have given for the Roman work is a good working average, at the point named. It would not have been fair to have overstated it, since it would have increased by so much the already heavy mass of Roman walling I have specified, all of which Mr. Watkin has to account for from his Roman foundations. The discussion of the measurement hardly affects any principle, and I have already acknowledged that in other places the Roman part is higher, at others lower.

E. P. Loftus Brock.

*** We have not space to continue the correspondence on this interesting subject further at present.

PUBLIC APPOINTMENTS.

Sir,—The Shirley and Freemantle Local Board recently advertised for a Surveyor. From a Southampton paper I have just noticed that that body met the same evening on which the applications had to be sent in, and there and then made the final selection out of sixty-six applicants. Does not this look as if the affair had been "cut and dried" and settled beforehand?

I do not complain of the successful candidate (who is no doubt perfectly competent) obtaining what influence he could; but I do think the Board are greatly to blame in advertising and putting so many persons to trouble and expense if they had no intention of fairly considering all the applications sent in.

O. E. H. T.

COMPETITIVE DESIGNS FOR WILLESDEN PUBLIC OFFICES.

Sir,—In your issue of last week, under the above heading the following statement was made, viz.:—"It appears that the design placed first by Mr. Harnor was formally accepted, subject to its being capable of being carried out at a cost of not more than 6,000*l.*,—the stipulated limit. It appears that the lowest contractor's estimate is considerably above that sum," &c.

As this matter is still before the Board, and is being considered by them, I do not feel myself at liberty to enter into the question beyond saying that the design has undergone certain modifications, which therefore render any comparison with the original sum named misleading. I can, however, say that, allowance being made for these, the lowest tender is as near the stipulated sum as can reasonably be expected.

Edward Harnor.

October 22nd, 1887.

*** We wrote on the basis of a newspaper report of the proceedings at the Willesden Local Board, which, as Mr. Harnor's letter seems to imply, may not have given a correct idea of the whole case. Of course, we have no wish to prejudice Mr. Harnor in any way, but we have a strong opinion that the conditions under which a competition design has been accepted ought, in fairness to all concerned, to be strictly observed.

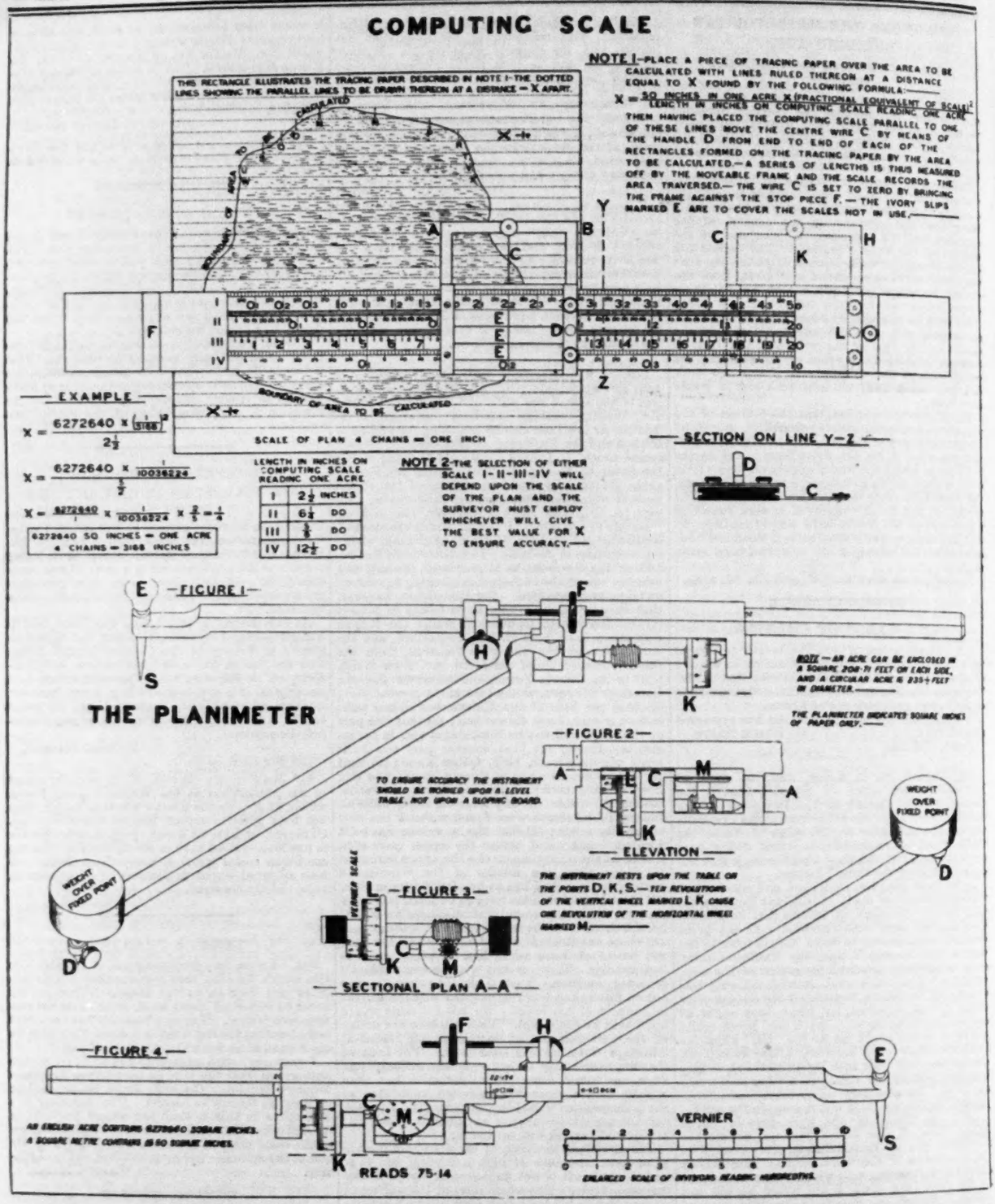
TERRY'S THEATRE.

Sir,—I note, in your description of the above, in this week's *Builder*, that you mention the gallery extra exit door on to the street. This door will never be locked at night at all until after the performance is over. The only reason it has been kept locked during the day time is because the rooms in the Strand block are not quite finished yet.

I may say, with regard to the coldness of the appearance, that this is not a necessary adjunct to a fireproof building; the walls could be papered or coloured as warmly as desired. The reason for this cold colour is that it shall not absorb the light or detract from the stage or dresses of the audience at the same time, as the effect that is given of air makes the audience feel more satisfied as to ventilation.

Walter Emden.

Extensions at the Royal College of Surgeons.—The Royal College of Surgeons, in Lincoln's Inn-fields, is at present undergoing a considerable enlargement by the addition of two floors, which increase the height of the structure by from 20 ft. to 30 ft., the building having now an elevation of about 80 ft. from the ground level. Each of the new floors has nine windows carried cross the frontage, the lower floor windows being circular in form. A main cornice and balustrade is surmounted by vases. The new floors cover the entire ground area occupied by the building, extending in depth to the rear in Portugal-street. They are intended for professional workrooms and scientific laboratories in connexion with the college. The library of the college is also about to be extended, and one of the houses in Lincoln's Inn-fields, on the east side of the college, has been purchased, and is now undergoing alterations for the purpose of adapting it to library purposes. Mr. Salter, of Woburn-place, is the architect; and Messrs. Higgs & Hill are the contractors.


COMPUTING SCALE
NOTE 1—PLACE A PIECE OF TRACING PAPER OVER THE AREA TO BE CALCULATED WITH LINES RULED THEREON AT A DISTANCE EQUAL TO X FOUND BY THE FOLLOWING FORMULA:—
X = 50 INCHES IN ONE ACRE X (FRACTIONAL EQUIVALENT OF SCALE)² / LENGTH IN INCHES ON COMPUTING SCALE READING ONE ACRE
THEN HAVING PLACED THE COMPUTING SCALE PARALLEL TO ONE OF THESE LINES MOVE THE CENTRE WIRE C BY MEANS OF THE HANDLE D FROM END TO END OF EACH OF THE RECTANGLES FORMED ON THE TRACING PAPER BY THE AREA TO BE CALCULATED.—A SERIES OF LENGTHS IS THUS MEASURED OFF BY THE MOVEABLE FRAME AND THE SCALE RECORDS THE AREA TRAVERSED.— THE WIRE C IS SET TO ZERO BY BRINGING THE FRAME AGAINST THE STOP PIECE F.— THE IVORY SLIPS MARKED E ARE TO COVER THE SCALES NOT IN USE.—
THIS RECTANGLE ILLUSTRATES THE TRACING PAPER DESCRIBED IN NOTE 1—THE DOTTED LINES SHOWING THE PARALLEL LINES TO BE DRAWN THEREON AT A DISTANCE = X APART.
BOUNDARY OF AREA TO BE CALCULATED
SCALE OF PLAN 4 CHAINS = ONE INCH
EXAMPLE
X = 6272640 x (1/3168)² / 2½
X = 6272640 x 1/10036224 / ½
X = 6272640/1 x 1/10036224 x 2/5 = ¼
6272640 SQ INCHES = ONE ACRE
4 CHAINS = 3168 INCHES
LENGTH IN INCHES ON COMPUTING SCALE READING ONE ACRE
I 2½ INCHES
II 6¼ DO
III ½ DO
IV 12½ DO
NOTE 2—THE SELECTION OF EITHER SCALE I-II-III-IV WILL DEPEND UPON THE SCALE OF THE PLAN AND THE SURVEYOR MUST EMPLOY WHICHEVER WILL GIVE THE BEST VALUE FOR X TO ENSURE ACCURACY.—
SECTION ON LINE Y-Z
THE PLANIMETER
FIGURE 1
NOTE—AN ACRE CAN BE ENCLOSED IN A SQUARE 208·71 FEET ON EACH SIDE, AND A CIRCULAR ACRE IS 235+ FEET IN DIAMETER.
THE PLANIMETER INDICATES SQUARE INCHES OF PAPER ONLY.
FIGURE 2
TO ENSURE ACCURACY THE INSTRUMENT SHOULD BE WORKED UPON A LEVEL TABLE, NOT UPON A SLOPING BOARD.
ELEVATION
WEIGHT OVER FIXED POINT
FIGURE 3
VERNIER SCALE
THE INSTRUMENT RESTS UPON THE TABLE ON THE POINTS D, K, S.— TEN REVOLUTIONS OF THE VERTICAL WHEEL MARKED L K CAUSE ONE REVOLUTION OF THE HORIZONTAL WHEEL MARKED M.
SECTIONAL PLAN A-A
FIGURE 4
AN ENGLISH ACRE CONTAINS 6272640 SQUARE INCHES. A SQUARE METRE CONTAINS 1550 SQUARE INCHES.
READS 75·14
VERNIER
ENLARGED SCALE OF DIVISIONS READING HUNDREDTHS.

The Student's Column.

LAND SURVEYING AND LEVELLING.

XVIII.—INSTRUMENTS FOR THE CALCULATION OF AREA.

THE annexed illustration shows a portion of a computing scale usually made to 3 chains to 1 inch. The large figures denote acres, and the subdivisions numbered 1, 2, 3 indicate roods. The perches are engraved upon the ivory scale attached to a movable metal frame, the use of which will be understood upon reference to the drawing of a complete instrument, as shown above, which illustrates the type of computing scale used at the Tithe Commission Office. The application to a plan is explained in note 1. Four scales are shown upon this instrument (see note 2). The example given supposes the plan to be drawn to a scale of 4 chains to 1 in., in which case the calculated distance between the parallel lines upon the tracing-paper is seen to be ¼ in., when the upper scale marked 1 is to be employed, and a length of 2½ in. is seen to measure an acre. The wire line C in the frame A B is first so set that the frame rests against the stop-piece F. It is then placed upon the tracing-paper over the area to be calculated so as to start from zero at the line M, with the edge of the scale parallel to the lines upon the tracing-paper, and after carefully moving the frame so that the line C traverses from M to N the instrument is then lifted up and replaced with its edge parallel to the lower lines upon the tracing-paper, so that the wire C starts from O at the same position on the scale as it indicated when at N. The frame is traversed over each rectangle successively from M to N, O to P, Q to R, S to T, &c., by means of the handle D (see section upon the line Y Z), and thus by a series of mechanical additions the area can be read off the scale in acres, roods, and poles. With the use of the upper scale, as shown, when the frame reaches the stop-piece L it indicates that five acres have been traversed.

In Merrett's improved computing scale the screw in the metal frame is made to act as a clamp, and different scales are supplied to fit the same metal frame, instead of the ivory pieces employed to cover the scales which are not required for use in the instrument adopted by the Tithe Commission Office. The reading edge is also bevelled off against the scale.

In the Planimeter the bar E F can be made either to slide in the box to which the other arm is attached (see fig. 1) or can be permanently fixed to this box. In the latter case it is constructed to record square inches only. In the former case it will record square inches when the mark upon the sliding box is made to come immediately under the mark upon the bar E F, which is situated near the figures 22·174 in fig. 4. The sliding box is fixed to the sliding arm E F by the clamp screw H, and the two marks above alluded to are made to coincide by the movement of the slow-motion screw F. The horizontal wheel M records the square units in one revolution, the wheel L records square units and tenth parts of a square unit, and the vernier attached outside the wheel L enables

hundredths of a square unit to be read. When the needle-point D is placed outside the area to be calculated no account is taken of the figures upon the sliding bar E F, but when the needle-point D is placed inside the area to be calculated, the number engraved upon the bar is to be added to the reading of the instrument after the boundary of the area has been completely traversed by the pointer S, before the first reading of the instrument is deducted. We will give an example in a future article to show the application.

Sir,—In the "Student's Column" in the *Builder* of October 15th, you give a formula for ranging curves which you illustrate by diagram, merely stating that the proof is contained in the figs. 4 and 5. I have taken the trouble to work out the solution from the said figs., and I obtain the following equation, which you will see differs very much in form from that which you give:—

$$C B = R \sin A - \sqrt{(R-r)^2 - \{(R-r) - R \operatorname{versin} A\}^2}$$

Would you kindly say if this is not correct, or would you give the detailed analysis of your own equation, and oblige,

Railway Assistant?

*** The geometrical proof is shown in fig. 4 (*Builder*, October 15th, p. 548). The algebraical proof is illustrated by fig. 5.

Fig. 4.—In order that the circle with the centre G, in fig. 3, should touch the tangent line E A, its centre must line in a line parallel to it, at a distance equal to its radius (see fig. 4), and in order that it should touch the circle having its centre at K, its centre must be in a circle having a radius equal to the difference of the two given radii, concentrical with the circle D C, which touches the tangent line F H (fig. 4). Therefore it lies in the intersection of the parallel line and the circle with a radius equal to the differences of the two given radii. This intersection comes in the point G (fig. 4). The problem, therefore, algebraically revolves itself into the following:—

If A = the angle F C E = A C H = N C K (fig. 5),
R = radius of original curve,
r = radius of new curve,
then $N C = R \cos A$,
$M C = r$,
$M G = N K - G P$,
$N K = R \sin A$,

$$G P = \sqrt{K G^2 - K P^2}$$

$$K G^2 = (R-r)^2$$

$$K P^2 = (N C - M C)^2 = (R \cos A - r)^2$$

$$\therefore G P = \sqrt{(R-r)^2 - (R \cos A - r)^2}$$

$$= \sqrt{R^2 - 2Rr + r^2 - R^2 \cos^2 A + 2Rr \cos A - r^2}$$

$$= \sqrt{R^2 (1 - \cos^2 A) + 2Rr (\cos A - 1)}$$

$$= \sqrt{R^2 \sin^2 A + 2Rr \left(1 - 2 \sin^2 \frac{A}{2} - 1\right)}$$

$$= \sqrt{R^2 \sin^2 A - 4Rr \sin^2 \frac{A}{2}}$$

$$\therefore M G = R \sin A - \sqrt{R^2 \sin^2 A - \left(4Rr \sin^2 \frac{A}{2}\right)}$$

Q. E. D. (see *Builder*, Oct. 15, p. 548).

N.B.—The "Railway Assistant" has since written to say that he has found the right solution, which agrees with ours! It is a pity he did not do so before giving all this trouble, but as the answer may be useful to others, we leave it to stand.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

13,419, Panelling, &c. W. H. Carmont.

In order to prevent the warping of wood, and for further convenience, the panelling is, according to this invention, made up of different thicknesses of wood glued or cemented closely together, with the grain or fibre placed crosswise. The wood is pressed in moulds, and the process may be applied to a variety of purposes where combined strength and lightness are required, such as in the manufacture of light furniture, &c., and is especially suitable in cases where the wood is exposed to the weather, as for instance in the bodies of vehicles.

14,223, Concrete Wall Construction. J. Tall.

According to this invention, in order to effect an easier connexion and disconnexion of the panels or stages used in concrete building a rotatable bolt is used, which by a half turn in one direction secures the panels, and by a half-round turn in the other direction allows them to be detached.

15,038, Rain-water, Stove, and other Pipes. J. Gregson.

By this invention, the nails or holdfasts are permanently fixed in the wall, and on the spigot or faucet, which is made much longer than usual, ears are cast, having holes so made that while the ear is passed over the nail by the lower hole, the weight of the pipe causes it to pass to a second one, where it may be fixed by wedge. The projections are also thicker than ordinary to allow the pipe to stand away from the walls.

15,184, Fanlights, Windows, &c. G. Stierlin.

The fanlight made in accordance with this invention is mounted on spring hinges. The spring catch is pulled, which unlocks the fanlight, at the same time it falls open. It is kept in any position by fastening a link of the chain on a peg at the side of the door.

15,546, Syphon Trap Closet-pans. A. C. Henderson.

The apparatus which is the subject of this invention is inodorous, and is designed to prevent sewer gas entering the house. The trap is in the form of an S, and is connected with the basin. Arrangements are made for flushing both basin and trap, and the form is designed to seal the trap against the inflow of sewer gas.

16,708, Syphon Cisterns. M. Syer.

According to this invention, the tube is flushed with water, and has the confined air acting as a valve to keep back the water and close the waterway; then a small bent tube attached to the syphon cover, charged with water by means of a hole in this small tube, in its turn acts as a valve to keep back the confined air under cover. To this bent tube is connected a small blow or suction pipe, used in conjunction with a "push" arrangement or lever, with sucker or plunger attached. Air is blown into the bent tube, and the trapping water therein is blown or sucked out, thus releasing the confined air, and allowing the water to flow down the syphon tube when all the water in the cistern is syphoned out.

NEW APPLICATIONS FOR PATENTS.

Oct. 14.—13,928, J. Hind and F. Sharp, Automatically Opening Doors from the Interior of Buildings in Cases of Emergency.—13,946, H. Whiteley, Opening and Closing Fanlights and Casements.—13,951, W. Howitt, Fixing Glass and other Roofing.—13,973, Sir G. Chubb and Others, Strong Rooms and Safes.—13,975, W. Moore, Preventing the Bursting of Water Pipes by Frost.

Oct. 15.—13,979, W. Taylor and G. Holley, Windguards for Chimneys and Ventilators.—14,025, Sir G. Chubb and G. Exton, Unfastening and Fastening Doors, &c.

Oct. 17.—14,041, E. Holt, Automatic Drain Cocks or Valves.—14,045, S. Tuddenham, Metal Bars and Frames for Windows, Doors, Panels, &c.—14,056, J. Beanland, Hinge for Doors, Gates, or Windows.—14,078, H. Elliott, Glazing Greenhouses, &c.

Oct. 18.—14,101, C. Gardner, Waterfall Fireproof Partition and Drop Screen.—14,113, E. Tarver, Construction of Theatres.—14,167, J. Greenslade, Window Frames and Sashes.

Oct. 19.—14,184, J. Fairbairn and R. Jones, Door and Window Fasteners.—14,206, D. Sorfleet, Automatic Draught, Dust, and Rain Excluder for Doors.—14,229, H. Lake, Wood Paving.

Oct. 20.—14,243. J. Dowman, Keeping Window or Door Sashes Raised or Open at any required Height.—14,281, J. Petter, Fireplaces.—14,287, P. Keogan, Fastening Show Case Doors or Window Casement.—14,294, W. Webb, Sewer Sanitation.

PROVISIONAL SPECIFICATIONS ACCEPTED.

6,383, F. Bosshardt, Levels and Clinometers.—12,072, E. Whibley, Cutting Tables for Band-sawing and Fret-sawing Machines.—12,266, J. Bradshaw, Chimney Pot.—12,439, J. Adams, Safety Exit Apparatus for Theatres, &c.—12,420, G. Paxton, jun., Corrugated Sheet Metal Roofs, &c.—12,466, R. Hunter, Door and Gate Locks.—12,538, G. Redfern, Draught, Wind, and Rain Excluders for Doors and Windows.—12,614, J. Hird and J. Ford, Casement Windows and Doors.—5,510, H. & E. Rielle, Machine for Making Pegs for joining together Joinery, Carpentry, Cabinet Work, &c.—11,742, J. Honeyman, Drain Pipes.—12,195, R. & G. Ellis, "Dog" for Fastening together Timber for Temporary Staging, &c.—12,312, H. Lake, Removable Stair Treads.—12,570, W. Foster, Connecting Pipes to Water-closet Basins, &c.—12,603, W. Baird, Fastenings for Doors of Theatres, Halls, &c.—12,775, W. Manders, Red or White Faced Stock Bricks.—12,817, M. Clarke, Fireproof Curtains for Theatres, &c.—13,111, S. Bennett, Hoists or Lifts.—13,207, A. Morley and H. Wilson, Indicators for Electric Bells.—13,329, D. Ratcliff, Safes and Strong-rooms.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

16,637, E. Mileson, Mantel-board.—16,811, H. House and H. House, jun., Door Checks and Buffers.—8,939, J. and J. Crombie, Concrete Pavements, Floors, &c.—10,461, T. Bray, Syphon Waterwaste Preventer Cistern for Water-closets.—12,161, G. Redfern, Water-meter.—12,638, A. Rammage, Flooring or Decking for Bridge Work and Building Construction.—16,847, F. Collins, Door-bolts, &c.—7,983, J. Root, Distemper, Paint, and other Brushes.—12,821, S. Pitt, Weather-guard for Doors, Windows, &c.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

October 17.

By Messrs. Cobb.

Kent, near Lenham Station—The Wychling House Estate, 336a. 3r. 32p. £4,550

By Gough & Dove.

Clapham—50, High-street, 23 years, ground-rent 12*l.* 10*s.* 400

By Mortimer, Jones, & Henry.

Nottingham, Parker-street—The Royal Oak Beer House 2,400

October 18.

By Debenham, Tewson, & Co.

Hornsey-lane, Dresden-road—A plot of freehold land 150

By F. J. Bibley.

Bermondsey—26 and 28, Jamaica-road, 30 years, ground-rent 6*l.* 10*s.* 470
Two cottages in rear, 30 years, ground-rent 4*l.* ... 300

By C. C. Taylor & Son.

St. George's-in-East—120, Cornwall-street, 78 years, ground-rent 15*l.* 200

October 19.

By T. Turner.

Harrow-road — 28, Bravington-road, 91 years, ground-rent 7*l.* 300

By Baxter, Payne, & Lepper.

St. Mary Cray—The Beech Tree Public House, freehold 3,800

By Inman, Sharp, & Harrington.

Leytonstone—Four plots of freehold land 140

By J. Dawson & Son.

Thames Ditton—The freehold residence, Copper Hill 1,270

October 20.

By B. Brown.

Stepney—33 and 34, Rectory-square, 77 years, ground-rent 9*l.* 700
Cubitt-town—Ground-rents of 65*l.*, reversion in 97 years 1,330
Ground-rents of 56*l.*, reversion in 95 years 1,140
Ground-rents of 73*l.*, reversion in 95 years 1,460
Ground-rents of 30*l.*, reversion in 97 years 612

By J. Pousty.

Clapham—99 to 105 odd, Leathwaite-road, 94 years, ground-rent 26*l.* 1,160

By C. D. Field & Sons.

Blackfriars—58 and 60, Surrey-road, copyhold 460
Bankside—29, Pitt's-place, freehold 150
Bermondsey—65, St. James's-road, freehold 500
No. 1, Collett-road 430

By Newbon & Harding.

Ealing—15, Woodville-road, 94 years, ground-rent 10*l.* 15*s.* 1,190
Kingsland—48, Shacklewell-lane, 77 years, ground-rent 1*l.* 445
Stoke Newington—9, 10, 12, and 14, Church-street, copyhold 1,760
Bermondsey—Ground-rent of 50*l.*, reversion in 16 years 1,500
Stoke Newington—Ground-rent of 30*l.*, reversion in 75 years 755
No. 106, Albion-road, freehold 515
Clerkenwell—3, Warden-place, freehold 395
Ponders's End Station, near—Freehold rent of 30*l.* for 37 years 765
Brighton—Ground-rent of 13*l.* 10*s.*, reversion in 42 years 305
Stoke Newington—45 and 47, Green-lanes, freehold 855

October 21.

By Rushworth & Stevens.

Kingsland—87, 89, 91, and 93, Downham-road, 32 years, ground-rent 1*l.* 1,340
Pimlico—8, Buckingham-street, 10 years, ground-rent 4*l.* 4*s.* 185

MEETINGS.

Saturday, October 29.

Association of Municipal and Sanitary Engineers and Surveyors (Home Counties District Meeting at Luton, Beds).—Mr. W. H. Leete on "Luton Sewage, Past and Present." Visits to Pumping Station and Sewage Farm, &c.

Monday, October 31.

Society of Antiquaries of Scotland (Rhind Lectures in Archæology).—Mr. Alexander S. Murray, LL.D., on "The Archæology of Greece." V. 4 p.m.

Tuesday, November 1.

Parkes Museum (Lectures for Sanitary Inspectors).—Dr. Charles Kelly on "Sanitary Law,—General Enactments, Public Health Act, 1875, Model Bye-law." 8 p.m.

Society of Biblical Archæology.—(1) Mr. E. A. Wallis Budge, M.A., on "The Tombs at Aswân excavated by Sir F. W. Grenfell, K.C.B. (2) Dr. W. Pleyte on "A Papyrus in the British Museum, recording an Egyptian Oracle." 8 p.m.

Manchester Architectural Association.—Address by the President, Mr. A. H. Davies-Colley, A.R.I.B.A. 7·30 p.m.

Wednesday, November 2.

Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting. 8·30 p.m.

Liverpool Engineering Society.—Mr. Hy. Pooley, Jun., on "Automatic Weighing."

Society of Antiquaries of Scotland (Rhind Lectures in Archæology).—Mr. Alexander S. Murray, LL.D., on "The Archæology of Greece." VI. 4 p.m.

Thursday, November 3.

Builders' Benevolent Institution.—Fortieth Annual Dinner, at Carpenters' Hall, London Wall. 6 p.m.

Royal Archæological Institute.—(1) Mr. F. H. Griffith on "Work of the Egypt Exploration Fund in the Spring of 1887." (2) Mr. Herbert Jones "On Antiquities in Brittany, lately visited by the Royal Archæological Institute." 4 p.m.

Friday, November 4.

Architectural Association.—Mr. J. C. L. Sparkes on "Architectural Modelling." 7 30 p.m.

Parkes Museum (Lectures for Sanitary Inspectors).—Mr. A. Wynter Blyth, M.R.C.S., L.S.A., on "Metropolitan Acts, Bye-Laws of Metropolitan Board of Works." 8 p.m.

Saturday, November 5.

Association of Public Sanitary Inspectors.—Address by the Chairman of Council, Mr. Hugh Alexander. 6 p.m.

Miscellanea

The Leland Club.—The four days' proceedings of this wandering body of antiquaries came to a pleasant and successful termination on Tuesday last week, at Mayfield Palace, which interesting old building, said to have been founded by St. Dunstan, was courteously shown to the party by one of the holy mothers of the sisterhood now occupying the historical edifice, which they have converted, with great care of the early work, to their religious uses, and generally repaired and restored throughout. Bayham Abbey, some ten miles distant, had been visited in the first part of the day, when the remains were described and commented on by Mr. John Reynolds, of Bristol, who, throughout the excursion, gave additional interest to the various castles, churches, and monastic buildings visited by the Lelanders by his lucid explanations of their architectural features and history generally. Mr. George Patrick, of Wandsworth, at Maplestead "Round Church," where he read an excellent paper on its history and foundation by the Knights Hospitallers, and at Rochester Cathedral, which he described in a short and telling address, added much to the instruction and interest of his listeners, as also by his paper on Hedingham Castle, and the doings of the great De Vere family, who, as Earls of Oxford, resided in that Norman stronghold in an uninterrupted succession for some 500 years. A word of praise must also be gratefully awarded to Mr. Rendle, who, on the first day of the meeting (Friday, the 14th inst.), gave the above society an admirable paper "On the History of Southwark," in the Church of St. Mary Overy, followed by Mr. Thomas Morgan, F.S.A., and Mr. R. E. Way, with a description of Gower's and other famous tombs therein, and the Roman antiquities still constantly discovered in digging foundations in various parts of the old Borough; many curious objects and several rare Roman coins of his own collecting the latter gentleman exhibited on the occasion. At the Armourers' and Braziers' Hall, which, by the kindly invitation of that ancient and honourable Company, the Lelanders visited the same afternoon, Mr. Charles J. Shoppee, a past-master, gave them a short but comprehensive history of the guild, accompanied by an exhibition of the arms, consisting of valuable suits of armour, rare old swords and other weapons of war, as well as pointing out the many fine old pictures, portraits, and rare engravings, and also exhibiting the rich and curious plate belonging to the Company. In the evening of this day, the members of the above club closed their interesting doings by paying a visit to the French (Huguenot) Hospital, near Dalston, of which Mr. A. Girand Browning, the Secretary, afterwards gave an account, as he led the members of the club through the passages and chambers of the "Hospice." At Rochester, on Monday, Mr. C. Roach Smith, F.S.A., as an honorary member of the Leland Club, met the party at the railway station, conducting them through the cathedral and the remains of the fine old Norman castle afterwards, at each of which he kindly gave short descriptions of their origin and history, and also of the Roman foundation of Durobriose (Rochester) itself. At "Kit's Coty House," which was visited later in the day, he delivered a comprehensive address upon the nature of such pre-historic monuments.

A New Cathedral Cloister at Exeter.—A few days ago Lord Clinton laid the corner-stone of a new cloister, at the south side of Exeter Cathedral. The scheme is to restore the old cloister, with a library, and the former foundation has been traced and the building will be erected according to the original form. The library will be over the cloister, extending from east to west. The total cost has not been estimated, but that of the portion in hand will be 4,000*l*. The 4,000*l*. will provide five bays of the cloister, with library, staircases, and lavatories. The architect is Mr. John L. Pearson, R.A., of London, and the builders, Messrs. Luscombe & Son, of Exeter.

The Society of Engineers' Visit to Acton and Ealing.—Our account of the Society of Engineers' visit to the sewage works at Acton and Ealing, the refuse destructor at Ealing, and the new storage reservoir at North Ealing for the Grand Junction Water Company, is unavoidably held over this week, for want of space.

The Office of City Architect.—At the meeting of the Court of Common Council last week, the Officers and Clerks' Committee brought up a report on the reference to consider the nature, duties, and emoluments of the office of City Architect, which has recently become vacant by the death of Sir Horace Jones. They submitted information as to the extent of the duties which devolved upon the department of the City Architect during the tenure of office by Sir H. Jones from 1864 to 1887. They considered that, looking to the extent and character of the new works executed under Sir H. Jones's direction, it was improbable that for some time to come the necessity for the employment of a gentleman of such acquirements would arise. The committee had, therefore, after very careful consideration, decided to recommend the appointment, at a salary of 800*l*. a year, of a gentleman of ability and capacity as the head of the department, to be called the City Surveyor, who should be competent, in ordinary circumstances, to undertake the discharge of the duties of an architect, except such as required the highest professional services. Mr. Sly, the Chairman, then moved the adoption of the committee's report, and stated that since the death of the City Architect the work of the department had been carried on most satisfactorily, and plans and specifications of the new City of London Court had been prepared and approved. Major Joseph, as an amendment, proposed that the appointment of an Architect and Surveyor should be continued. The subject gave rise to a long discussion. On a division, the amendment was lost by 79 votes to 71. Mr. Deputy Ashby moved the adjournment of the debate, which was lost, and the report was ultimately adopted by a majority of 11, though Mr. George Shaw at once gave notice of a motion to rescind the resolution.

The Glasgow Institute of Architects.—The twentieth annual general meeting of the Glasgow Institute of Architects (Incorporated) was held in the Religious Institution Rooms, Glasgow, on the 18th inst., Mr. David Thomson, President, in the chair. The report of the Council, which was read by Mr. William MacLean, the secretary, gave an account of the work of the Institute during the year. The financial statement, submitted by Mr. T. L. Watson, showed a balance in favour of the Institute of 289*l*. 1s. 5d. In moving the adoption of the reports, the Chairman congratulated the members on the flourishing state of the society. As to the proposed Registration Bill, he had attended a conference in London, and had expressed the opinion, on behalf of the Council, that they would oppose the formation of a central association in London for the regulation of all professional matters in the provinces.

Employes' Supper.—A very pleasant gathering of the *employés* of the firm of Messrs. Bunning & Sons, contractors, London, who are engaged in the work of restoring the parish church of Frolesworth, took place at the residence of Mr. Hoggins, farmer, on Monday evening last. The work of restoration being near to completion, Mr. H. Bunning, junior member of the firm, took the opportunity of complimenting their *employés* for the assiduity and workmanlike manner which has marked their conduct during the somewhat short and forced period (owing to the approach of winter) that the work has been in progress by entertaining them to a substantial supper.

The Late Lord Iddesleigh.—A statue to the memory of the late Lord Iddesleigh was unveiled at Exeter on Wednesday, the 19th inst., by the Lord-Lieutenant of Devon (Lord Clinton). It has been executed in Sicilian marble by Mr. J. E. Boehm, Esq., A.R.A., and is described as a most faithful likeness. It stands on a pedestal of polished grey Haytor (Devonshire) granite, which has been executed for the sculptor by Messrs. J. Easton & Son, of Exeter.

Royal Institute of British Architects.—The opening meeting of this Institute for the present session will take place on Monday evening, November 7th, when there will be a ballot for new members, and the President (Mr. Edward I'Anson, F.G.S.) will deliver his opening address.

Bradford Post-Office.—We are asked to mention that the wood block-flooring at the Bradford post-office (illustrated in our last) was laid by Messrs. M. C. Duffy & Son, Limited, of Bermondsey.

Mr. Conder's Sewage Purification Process.—The Rural Sanitary Authority for Surrey has recommended the adoption of this system in connexion with the drainage into Beomond's Watercourse, Chertsey. At the meeting of the Board last week Mr. Durrant presented to the Board a report on the question, in the course of which he said, as reported in the *Surrey Advertiser*:—"I have again visited the Chichester outfall, and from what I saw and the sample of effluent water obtained, I am of opinion that the scheme without proper settling tanks being provided would be of little or no use for the purpose required for Chertsey, or any of our villages in the valley of the Thames. Mr. Conder, who himself visited Chertsey last Saturday, also pointed out another grave difficulty, namely, the uncertain flow of the refuse from the brewery, but this he informed me could be got over by the Sanitary Authority requiring that the brewery refuse should be so purified by the brewers themselves, before entering the main drain, as to be harmless to the scheme. From these facts I would beg to suggest that Mr. Conder be asked to put up his apparatus, and that temporary tanks be provided, so that the scheme can be tested before any other steps are taken." The Board then gave their assent to try the scheme.

Association of Municipal and Sanitary Engineers and Surveyors.—The fourth examination of candidates for the offices of Municipal Engineer and Local Board Surveyor, carried out under the auspices of this association, was held at the Town-hall, Manchester, on Friday and Saturday, the 7th and 8th of October, 1887. The examiners in the several subjects were:—1, Engineering as applied to Municipal Works, Mr. E. B. Ellice Clark, M.I.C.E., County Surveyor, Sussex (West), late Surveyor to the Commissioners, Hove; 2, Building Construction, Mr. W. G. Laws, City Engineer, Newcastle-on-Tyne; 3, Sanitary Science, Mr. J. Gordon, M.I.C.E., Borough Engineer, Leicester, President of the Association; 4, Public Health Law, Mr. H. P. Boulnois, M.I.C.E., Borough Engineer, Portsmouth. The following gentlemen, having satisfied the examiners, were granted their certificates of competency by the Council:—Messrs. J. Cook, T. E. W. Mellor, J. W. Metcalf, W. Parker, R. W. Smith-Saville, F. D. Ward.

Appointment.—Out of 100 applications for the appointment of clerk of works for the outfall sewerage works at Burnham, Mr. A. E. White, of Westminster, has been elected. Mr. Henry Hill, of High Wycombe, is the contractor.

Cremation in Sweden.—The first crematorium in Sweden was finished at Stockholm a few weeks ago, and the first cremation in that country was carried out on Saturday last.

PRICES CURRENT OF MATERIALS.

TIMBER.	£. s. d.	£. s. d.
Greenheart, B.G. ....ton	6 5 0	7 10 0
Teak, E.I. ....load	8 0 0	12 10 0
Sequoia, U.S. ....foot cube	0 2 3	0 3 0
Ash, Canada ....load	3 0 0	4 10 0
Birch ,, ...	3 0 0	3 10 0
Elm ,, ...	3 10 0	4 10 0
Fir, Dantzic, &c.	1 10 0	4 0 0
Oak ,, ...	3 10 0	4 10 0
Canada	3 0 0	8 0 0
Pine, Canada red	3 0 0	3 10 0
,, yellow	2 0 0	4 0 0
Lath, Dantzic ....fathom	3 0 0	5 0 0
St. Petersburg	4 0 0	5 10 0
Wainscot, Riga ....log	0 0 0	0 0 0
,, Odessa, crown	2 10 0	3 0 0
Deals, Finland, 2nd and 1st...std. 100	7 0 0	8 0 0
,, 4th and 3rd	5 10 0	6 10 0
Riga	5 10 0	7 0 0
St. Petersburg, 1st yellow	8 10 0	13 0 0
,, 2nd ,, ...	7 0 0	8 0 0
,, white	6 10 0	8 10 0
Swedish	6 0 0	14 0 0
White Sea	0 0 0	0 0 0
Canada, Pine, 1st	18 0 0	24 0 0
,, ,, 2nd	10 0 0	15 0 0
,, ,, 3rd, &c.	8 0 0	9 0 0
,, Spruce, 1st	8 0 0	9 0 0
,, ,, 3rd and 2nd	5 0 0	7 0 0
New Brunswick, &c.	5 0 0	8 10 0
Battens, all kinds	4 0 0	10 10 0
Flooring Boards, sq., 1 in., prepared, First	0 8 0	0 11 0
Second	0 6 6	0 7 6
Other qualities	0 4 0	0 6 0
Cedar, Cuba ....foot	0 0 3½	0 0 3½
Honduras, &c.	0 0 2½	0 0 3
Australian	0 0 2	0 0 3
Mahogany, Cuba	0 0 4	0 0 6½
St. Domingo, cargo average	0 0 4	0 0 5½
Mexican ,, ...	0 0 3	0 0 3½
Tobasco ,, ...	0 0 3½	0 0 5
Honduras ,, ...	0 0 3½	0 0 5
Maple, Bird's-eye	0 0 5	0 0 7
Rose, Rio ....ton	8 0 0	11 0 0
Bahia	7 0 0	9 0 0

TIMBER (*continued*).	£. s. d.	£. s. d.
Box, Turkey ....ton	5 0 0	12 0 0
Satin, St. Domingo ....foot	0 0 5	0 0 9
Porto Rico	0 0 6	0 0 10
Walnut, Italian	0 0 3½	0 0 5
METALS.		
IRON—Bar, Welsh, in London....ton	4 15 0	5 0 0
,, in Wales	4 5 0	4 10 0
,, Staffordshire, London	5 10 0	6 0 0
COPPER—		
British, cake and ingot ....ton	43 10 0	44 10 0
Best selected	45 0 0	45 10 0
Sheets, strong....	39 17 6	41 5 0
Chili, bars	0 0 4½	0 0 4½
YELLOW METAL....lb.	0 0 4½	0 0 4½
LEAD—		
Pig, Spanish ....ton	12 2 6	0 0 0
English, common brands....	12 7 6	0 0 0
Sheet, English	13 7 6	0 0 0
SPELTER—		
Silesian, special ....ton	16 5 0	16 7 6
Ordinary brands....	16 0 0	0 0 0

METALS (*continued*).	£. s. d.	£. s. d.
TIN—		
Straits....ton	120 0 0	0 0 0
Australian	120 0 0	0 0 0
English ingots	120 10 0	0 0 0
OILS.		
Linseed ....ton	19 10 0	19 15 0
Cocoanut, Cochin	30 0 0	32 0 0
Ceylon	24 0 0	0 0 0
Palm, Lagos	22 0 0	0 0 0
Rapeseed, English pale	25 10 0	0 0 0
,, brown	24 0 0	0 0 0
Cottonseed, refined	20 0 0	0 0 0
Tallow and Oleine....	25 0 0	45 0 0
Lubricating, U.S....	5 0 0	6 0 0
,, refined....	5 0 0	12 0 0
TURPENTINE—		
American, in casks ....cwt.	1 4 9	0 0 0
TAR—		
Stockholm ....barrel	0 14 0	0 14 6
Archangel	0 9 6	0 9 9

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Public Building	New Barnet Public B. C.	25 guineas	Nov. 15th	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Forming and Making-up Road	Beckenham Local Brd.	G. B. Carlton	October 31st	ii.
Superstructure, Liverpool University College	....	A. Waterhouse	Nov. 1st	ix.
Relaying Carriageways, &c.	Mile End Vestry	J. M. Knight	Nov. 2nd	ix.
Stabling	Midland Railway Co....	*Official*	Nov. 4th	ix.
Sewering, &c., Works	Hendon Local Board ...	S. S. Grimley	Nov. 7th	ix.
Works to Mortuary Buildings	St. Luke's (Middlesex) Vestry	W. C. Mesby....	Nov. 8th	ii.
Making-up and Paving Roads	Wandsworth Bd. of Wks	*Official*	do.	ix.
Road-making and Paving Works	Hammersmith Vestry...	do.	Nov. 9th	ix.
Artisans' Workshops, Vegetable Stores, &c.	Met. Asylums Board ...	do.	Nov. 10th	ii.
Guernsey Granite Spalls....	Dartford Union	do.	Nov. 11th	ii.
Fire-Escape Bridges, &c.	St. George's Union....	H. Saxon Snell	Nov. 16th	ix.
Disposal of Dust, Ashes, &c....	Fulham Vestry....	*Official*	do.	ii.
Builder's Ironmongery	School Brd. for London	do.	Not stated...	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
District Surveyor, Charlton, Lee, &c.	Met. Board of Works...	Not stated	Nov. 2nd	xiv.
Surveyor of Buildings, Public Works, Ireland	Civil Service Com.	do.	Nov. 16th	xiv.

TENDERS.

BARNES (Surrey).—For erecting a mission-hall in Railway-street. Mr. W. H. Atkin Berry, A.R.I.B.A., architect, 35, Bedford-row, W.C. Quantities by Mr. Jas. Kennedy, 31, Great James-street, Bedford-row, W.C.:—

Adamson & Son, Putney	£900 0 0
J. Hill, Barnes....	890 0 0
A. Sale, Barnes	786 0 0
A. Hunt, Barnes..	733 0 0

BIRMINGHAM. — For the erection of two semi-detached houses in the Hampton-road, Birchfield. Mr. Thos. G. Price, architect, Birmingham:—

John Hopkins, Birmingham (accepted)	£740 0 0

BIRMINGHAM.—For the erection of 36 houses and cottages in the Chain Walk, Lozells, for Mr. Ezra Riley. Mr. Thos. G. Price, architect, Birmingham. Quantities by the architect:—

Williams, Aston	£5,330 0 0
Hughes, Handsworth	4,930 0 0
Hulbert, Handsworth....	4,886 0 0
Bloore, Aston	4,881 0 0
Archer, Birmingham...	4,850 0 0
Barker, Handsworth	4,831 0 0
Bamfield, Aston	4,775 0 0
Twigg, Birmingham....	4,790 0 0
Pritchard, Handsworth	3,900 0 0
Johnson, Nechells	3,580 0 0
Hopkins, Aston (accepted)	3,470 0 0

CANTERBURY.—For iron roof of the Greengrocery Market, Canterbury. Mr. F. Baker, C.E., Borough Surveyor:—

Hodgson....	£426 10 0
Wiltshire	395 0 0
Jukes & Co.	386 0 0
Roof only.	
Rendle & Co....	360 10 0
Newton & Co.	356 0 0
Willey & Co....	345 0 0
Pocock	338 0 0
Goddard & Massey....	330 0 0

Wiltshire (accepted).

DEPTFORD.—For the erection of a warehouse, New King-street, Deptford, for Mr. G. Beck. Mr. Horace T. Bonner, A.R.I.B.A., architect, 29 and 30, King street, Cheapside. Quantities by Mr. C. A. Garrett:—

J. W. Dixon & Co., Hackney....	£1,121 0 0
J. T. Stevens, New Eltham	1,090 0 0
H. Potter, Lower Clapton....	1,014 0 0
A. Thomas, New Cross	974 0 0
T. D. Long, Deptford	944 0 0
S. Scholfield, Deptford	918 0 0
S. J. Jerrard, Lewisham	789 0 0
H. L. Holloway,* New Cross	779 19 0

* Accepted subject to modification.

DENBURY (South Devon).—For dwelling-house at Denbury, South Devon, for Mr. Josiah Badcock. Mr. S. Segar, architect:—

J. Southcombe, Torquay	£496 13 0
Sercombe & King, Newton Abbot	364 0 0
J. Zealey & Son, Newton Abbot	350 0 0
J. H. Foaden, Ashburton....	329 0 0
F. Barrow, Newton Abbot (accepted)	326 15 0

EALING.—For the erection of a house in the Hamilton-road, Ealing, for Mr. J. Lee Thomas. Mr. Robert Willey, F.R.I.B.A., architect, 66, Ludgate-hill, E.C.:—

Mr. Thomas Nye, Ealing (accepted)	£1,720 0 0

EAST GRINSTEAD.—For the erection of Board room, offices, and surveyor's residence, for the East Grinstead Local Board. Mr. W. N. Martin, architect, Wimbledon. Quantities by the architect:—

J. Longley, Crawley	£911 0 0
J. Cardos	888 0 0
A. Foster, East Grinstead	852 15 6
R. Pink, Godalming	847 0 0
Criswell & Chitty, East Grinstead	837 17 0
W. Pledge, East Grinstead	789 14 4
J. Beard, East Grinstead....	757 0 0
J. Morris, East Grinstead....	740 0 0
Charlwood Bros.,* East Grinstead ...	685 0 0

* Accepted.

GOSBERTON (Lincolnshire).—For the erection of a cemetery chapel at Gosberton, for the Gosberton Burial Board. Mr. Joseph Sawyer, architect, Spalding. Quantities prepared by the architect:—

Thomas Pick, Spalding	£474 0 0
J. B. Newton, East Heckington	395 0 0
C. A. Watson, Spalding....	392 0 0
W. H. Lyon, Stamford	380 0 0
H. Hobson, Hogsthorpe	357 0 0
W. Emerson, Stamford....	347 0 0
W. Greenfield, Boston	330 0 0
John Langley, Kirton	326 0 0
John Holmes, Wainfleet (accepted)..	325 0 0
James Leafe, Boston	321 0 0

GUILDFORD. — For alterations to premises, new stabling, &c., Pitch-place, for Robinson's Trust. Mr. J. William Stevens, 21, New Bridge-street, E.C., architect and surveyor:—

G. Strudwick	£363 0 0
Tribe & Robinson	362 0 0
E. Downes	342 12 0
E. Glew	320 0 0
E. Seaber (accepted)....	259 0 0

HANDSWORTH.—For the erection of one detached and two semi-detached residences at Handsworth, near Birmingham. Mr. Thomas G. Price, architect, Birmingham. Quantities by the architect:—

Harley & Son, Smethwick....	£1,530 0 0
Johnson, Nechells	1,445 0 0
Twigg, Birmingham (accepted)	1,440 0 0
Hulbert, Handsworth....	1,393 0 0

LAMBETH.—For the erection of a new library building in the South Lambeth-road, to be presented by Mr. Henry Tate, J.P., to the Lambeth Libraries Commissioners. Mr. Sidney R. J. Smith, A.R.I.B.A., architect, No. 15, York Buildings, Adelphi, W.C. Quantities supplied:—

	Portland stone dressings.	Doulting stone dressings.	Fittings.
G. Cond'er	£5,050 ...	£4,900 ...	£500
J. & C. Bowyer....	4,927 ...	4,794 ...	366
W. Smith....	4,855 ...	4,805 ...	498
Holliday & Greenwood....	4,747 ...	4,707 ...	397
Hall, Beddall & Co.	4,680 ...	4,615 ...	505
F. & H. F. Higgs...	4,640 ...	4,465 ...	390
J. Mills	4,600 ...	4,550 ...	450
Higgs & Hill	4,330 ...	4,294 ...	374
Nightingale*	4,270 ...	4,225 ...	390

* Accepted.

LEICESTER.—For sanitary shed with retaining walls in connexion therewith to be erected by the Corporation of Leicester in the borough of Leicester, on land belonging to the Great Northern Railway Company. Mr. J. Gordon, M. Inst. C.E., Borough Surveyor, Leicester:—

James Evans	£2,395 6 5
E. B. Pipes....	2,032 8 6
Clarke & Garrett	2,012 0 0
S. & E. Bentley....	2,000 0 0
John Marston	1,998 0 0
T. & H. Herbert	1,994 12 10
John Bentley....	1,962 0 0
J. A. Sharpe & Sons	1,915 0 0
Tyers & Yates	1,901 16 0
J. O. Jewsbury	1,899 0 0
Duxbury & Son (accepted)	1,877 10 7

[All of Leicester.]

LEICESTER. — For boarded fence, together with entrance-gates, &c., to be erected round the Groby-road Sanitary Depôt, for the Corporation of Leicester. Mr. J. Gordon, M. Inst. C.E., Borough Surveyor:—

Alfred Plant	£179 0 0
T. T. Brown....	155 10 0
Charles Bass....	153 0 0
Gimson & Sons (accepted)....	149 8 6

[All of Leicester.]

LEICESTER.—For the erection of additional w.c.'s at the Market House, Leicester. Mr. J. Gordon, M. Inst. C.E., Borough Surveyor:—

J. O. Jewsbury....	£139 19 0
Getliffe	110 0 0
Sharpe & Sons	109 15 0
A. Plant....	109 10 0
J. Chester (accepted)....	103 0 0

[All of Leicester.]

LONDON.—For alterations and new fittings to the Cross Keys Public House, Theobald's-road, W.C., for Mr. Belsey. Mr. A. Saville, architect, Strand:—

Drew & Cadman	£1,495 0 0
J. Anley....	1,297 0 0
Ward & Lamble	1,287 0 0
Yardley & Sons....	1,287 0 0
Riley Bros....	1,231 0 0
T. Boyden (accepted)....	840 0 0

LONDON.—For counter and pewtering at the Cross Keys Public House, Theobald's-road, W.C., for Mr. Belsey. Mr. A. Saville, architect, Strand:—

W. Helling....	£145 0 0
T. Heath	139 0 0
Farmiloe & Sons	136 0 0
Yardley & Sons	131 0 0
Watts & Co.	128 17 0
G. F. Moody....	124 15 0

LONDON. — For alterations and additions to the Queen's Arms, Hackney-road, for Mr. D'Ardenne. Messrs. Williams & Son, architect s:—

Jackson & Todd	£1,379 0 0
Salt	1,265 0 0
Staines....	1,232 0 0
Thomerson & Son (accepted)	1,169 0 0

LONDON. — For alterations and additions at 21, Berkeley-square, for Mr. A. Guthrie. Mr. R. Selden Wornum, architect. No quantities supplied:—

Kinnimmont & Sons, Paddington	£1,760 0 0
G. P. Kent, South Kensington....	1,738 0 0
Thomas Hussey, South Kensington	1,721 0 0

LONDON.—For re-building the Bedford Arms, East-street, Walworth, for Mr. John Harris. Mr. F. A. Powell, architect, Kennington Park-road:—

Holliday & Greenwood	£2,247 0 0
Jones	2,187 0 0
Anley	2,164 0 0
Tyerman	2,125 0 0
Knight	2,100 0 0
Gould & Brand....	2,097 0 0
Burman & Sons....	1,997 0 0
W. & H. Castle (accepted)	1,873 0 0

LONDON.—For alterations and repairs, carpenters' and joiners' work, painting, &c., for the Mayfield Sanitary Laundry Company, Gillespie-road, Highbury, N.:—

F. Blandford,* Avenell-road, Highbury	£349 10 0

* Accepted.

LONDON.— For the erection of a new school for 1,000 children, to take the place of the present Hornsey-road School (Finsbury AZ), for the School Board for London. Mr. T. J. Bailey, architect:—

J. Tyerman	£14,524 0 0
W. M. Dabbs	12,417 0 0
Stimpson & Co.	11,280 0 0
W. Johnson....	11,243 0 0
C. Wall,* Lot's-road, Chelsea	10,791 0 0

* Recommended by the Works Committee for acceptance.

LONDON.—For the enlargement of the Sydenham Hill-road School (Greenwich AN), by 200 places, for the School Board for London. Mr. T. J. Bailey, architect:—

King Bros. & Co....	£2,474 0 0
C. Wall	2,353 0 0
W. Johnson,* Wandsworth Common	2,345 0 0

* Recommended by the Works Committee for acceptance.

LONDON.—For alterations and additions to the Bull, No. 2, Old Kent-road, and for the erection of two houses adjoining the Bull, for Mr. H. H. Finch. Mr. A. E. Hughes, architect:—

Faulkner	£2,413	0	0
David King & Son	2,263	0	0
Drew & Cadman	2,231	0	0
Downs	2,142	0	0
G. S. Williams	2,132	0	0

MONMOUTH.—For building two vestries, St. Thomas's Church, Overmonnow. Mr. F. A. Powell, architect, Monmouth:—

W. Simmons (accepted)	£293	0	0

MONMOUTH.—For re-building No. 3, Agincourt-square, for Mr. Frederick Wright. Mr. F. A. Powell, architect, Monmouth:—

W. C. Shannon	£493	0	0
C. Morgan	415	0	0
W. Simmons (accepted)	340	0	0

NUNHEAD.—For new Baptist chapel, schoolroom, and vestries. Messrs. Chas. Gray Searle & Son, architects. Quantities by the architect:—

L. H. & R. Roberts	£5,724	0	0
Wm. Goodman	5,555	0	0
Dove Bros.	5,435	0	0
Higgs & Hill	4,994	0	0
F. & H. F. Higgs	4,870	0	0
B. E. Nightingale	4,643	0	0
John Woodward	4,643	0	0

PARKESTON (Essex).—For proposed schools for the Ramsey School Board. Mr. H. A. Wooster Reeves, architect, 14, Devonshire-square, Bishopsgate, and at Colchester. Quantities supplied:—

Keaney, Ipswich	£3,998	0	0
Horlock, Manor Park	3,350	0	0
Wawman, Felixstowe	3,345	0	0
Oldridge, Colchester	3,300	0	0
Grimwood, Sudbury	3,290	0	0
Bunting, Fenstanton	3,160	0	0
Dobson, Colchester	3,080	0	0
Gibbons, Ipswich	2,850	0	0
Diss, Colchester	2,795	0	0

ST. MARY CRAY (Kent).—For rebuilding a corner shop at St. Mary Cray, Kent, for Mr. G. Ogburn. Mr. St. Pierre Harris, architect and surveyor, 1, Basinghall-street, E.C.:—

Hart Bros.	£670	0	0
Knight	670	0	0
M. Marsland	652	0	0
Somerford & Son	639	0	0
Taylor & Son	598	0	0
F. Wood (accepted)	563	0	0

SOUTH SHIELDS.—For the erection of cemetery chapels and superintendent's house, situate near Westoe, for the South Shields Burial Board. Mr. Henry Grieves, A.R.I.B.A., architect, South Shields. Quantities supplied by Mr. George Connell, Newcastle-on-Tyne:—

Wm. Kennedy, Jarrow	£5,190	12	0
Wm. Scott, South Shields	4,865	3	7½
R. Brown, South Shields	4,819	1	2½
J. Young, South Shields	4,396	15	7
F. Mackey, South Shields	4,147	16	4
R. Napier, South Shields	4,008	3	9½
R. Allison, Whitburn	3,887	10	5
Hudson & Co., South Shields*	3,750	10	8
Atkin & Co., South Shields	3,627	0	0
R. Wilson, South Shields	3,340	10	0

* Accepted.

SOUTH SHIELDS.—For alterations and erection of two shops at Nos. 1 and 2, Victoria-terrace, South Shields, for Mr. W. Gowans, M.D. Mr. Henry Grieves, A.R.I.B.A., architect, South Shields:—

S. Sheriff	£580	0	0
J. Gilfillan	535	10	0
R. Atkin & Co.	498	0	0
W. Scott	467	3	0
N. Napier	450	10	0
G. Goddard	423	4	0
J. Ayre	408	0	0
Goodwin & Son (accepted)	399	10	0

[All of South Shields.]

TOTTENHAM.—For making-up, &c., Bremner-road, for the Local Board of Health, Tottenham:—

Nicholls, Wood Green	£467	0	0
Rendall, Walthamstow	456	1	10
Bloomfield, Tottenham	442	15	7
Trickett & Son, Millwall	396	0	0
Adams, Kingsland	381	0	0
Griffiths, Kingsland	375	0	0
Bradshaw & Co., Tottenham (accepted)	341	11	3

WESTON-SUPER-MARE.—For the second section of work to three houses in Walliscote-road, for Mr. R. Fear. Messrs. Barker & Cross, architects:—

Vowles	£300	0	0
Durston	290	0	0
Williams	266	12	10
Pollard (accepted)	265	0	0

*** **SPECIAL NOTICE.**—*Lists of Tenders frequently reach us too late for insertion. They should be delivered at our office, 46, Catherine-street, W.C., not later than 12 Noon on* THURSDAYS.

TO CORRESPONDENTS.

Registered Telegraphic Address, "THE BUILDER, LONDON."

M. & Sons (your letter seems to be practically an advertisement of a special form of fire extinguisher. For that our advertising columns are open).—H. T. G. (thanks).—G. T.—R. R.—H. G. (then you read the *Builder* to very little purpose).—W. S. C.—R. & Sons (your letter is not one that we can print, a great deal of it being entirely uncalled for by anything in the letter to which it professes to be a reply).—T. S. M'C.—C. S.—W. W. (we do not think the architectural profession will accept you as their champion).

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; all communications relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHERS, and not to the Editor.

Best Bath Stone.

CORSHAM DOWN. | FARLEIGH DOWN

BOX GROUND. | COMBE DOWN.
WESTWOOD GROUND. | STOKE GROUND.

RANDELL, SAUNDERS, & CO., LD., CORSHAM, WILTS.

Bath Stone.

Pictor's Monks' Park. Combe Down.
Corsham Down. Stoke Ground.
Box Ground. Winsley Ground.
Farleigh Down. West Wood.

PICTOR & SONS, Box, Wilts. [ADVT.

Doulting Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Doulting Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK & SONS, Norton-sub-Hamdon, Ilminster, Somerset.—Agent, Mr. E. WILLIAMS, No. 16, Craven-street, Strand, W.C. [ADVT.

Doulting Free Stone HAM HILL STONE, BLUE LIAS LIME (Ground or Lump), For prices, &c., address S. & J. STAPLE, Quarry Owners, Stone and Lime Merchants, Stoke-under-Ham, Ilminster. [ADVT.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 28, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds, and milk-rooms, granaries, tun-rooms, and terraces. [ADVT

Asphalte.
Seyssel, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [ADVT

SPRAGUE & CO.,
STATIONERS, &c.,
Keep a Special Stock of Sundries for Professional Offices.
22, Martin's-lane, Cannon-street, E.C. [ADVT.

To Builders, Builders' Supply Merchants, and Others.—WHALLEY'S WATER-CLOSET, for using waste water from lavatories, sinks, roofs, &c., will flush immediately after being used. Costs 50 per cent. less than ordinary water-closets. No water cistern required. No fittings. No water supply. Simplicity and effectiveness guaranteed. Being largely adopted and giving every satisfaction.
Testimonials from Sanitary Engineers, Sanitary Inspectors, Medical Officers, &c. Highly spoken of by the leading trade papers.
Prices, drawings, and full particulars, on application to
BROOKS & PICKUP,
Towneley Colliery, Burnley. [ADVT.

Scaffold Poles, fresh Petersburg, 35 ft., 3s. 9d.; 28 ft., 2s.; 22 ft., 1s. 4d. each. A prime parcel of clean selected 1 by 11 and 1 by 11 Pitch-Pine, in the Surrey Docks, cheap; also a very choice parcel of 12 ft. and 13 ft. 3 by 11 second dry Yellow Pine, at a very low price.
J. ARCHER SMITH,
Timber Merchant and Importer,
No. 271, Southwark Bridge-road and Greyhound Bridge, Old Kent-road, S.E. [ADVT.

FIRE BRICKS.
BEST STOURBRIDGE FIRE BRICKS, and Cement Fire Clay, Gas Retorts, Muffles, &c. Fire Bricks and Blocks for the Highest Heats, for Iron Blast Furnaces, Forge, Rolling, Puddling, and Steel Furnaces, Flint Glass Furnaces, Reheating and Refining Furnaces, Chemical Works, Coke Ovens, &c. Boiler Seating Blocks, Flue Covers, Locomotive Bricks, Tuyeres, Steel Runners, Gas Backs. Special Sizes and Shapes made to Engineers' Drawings.
Prices quoted to any Port or Railway Station.
London Agents:—
R. CULL & SON, *Palmerston-buildings, E.C.*

GLAZED BRICKS.
OATES & GREEN, HALIFAX.
GLAZED BRICKS (White and Coloured), Special Salt-glazed Bricks, Sanitary Tubes, Glazed Earthenware Sinks, Cattle, Sheep, and Pig Troughs, Horse Mangers, Patent Automatic Trough Closet, Patent Flush Tank. Ventilating Bricks, Patent Ventilating Gullis and Traps, Patent Chimney Pots for Down Draughts.
Six Prize Medals. Copies of Testimonials sent if required.
London Agents:—
R. CULL & SON, Palmerston-buildings, E.C.

BLUE BRICKS.
THE KETLEY BRICK COMPANY, KINGSWINFORD Staffordshire. Manufacturers of Blue Bricks.
London Agents:—
R. CULL & SON, Palmerston-buildings, E.C.

DRAIN PIPES.
Lime, Cement, Bricks, Slates, Laths, Hair, Plaster, Wall Copings, Channel Bricks, Blue and Red Ridges, Red Plain Tiles and Pan Tiles, Closet Pans and Traps, Bends, Junctions, &c. all sizes. Chimney-Pots, Red and White. PRICES on APPLICATION.
R. CULL & SON'S Stores, Railway Arches, London-street, Bethnal Green Station, E.
Chief Office:—73, Palmerston-buildings, Old Broad-street, E.C.

MICHELMORE & REAP,
Manufacturers of
CHARLES COLLINGE'S PATENT
COLLINGE'S PATENT HINGES, LEVER, SCREW, & BARREL BOLTS,
Self-Acting "FALL DOWN" GATE STOPS, and IMPROVED GATE FITTINGS of every Description
36A, BOROUGH ROAD, LONDON, S.E.
A LIBERAL DISCOUNT TO BUILDERS.

F. BRABY & CO.'S PATENT GLAZING.

GLASS SET FREE,
ALLOWING EXPANSION AND CONTRACTION, AND PRECLUDING BREAKAGE.
ABSOLUTELY WATERTIGHT. PAINTING AND PUTTY SUPERSEDED.
OVER THREE MILLION FEET FIXED.
DRAWINGS AND PRICES ON APPLICATION.
MODELS AND SECTIONS ON VIEW.

LONDON: 352 to 362, EUSTON ROAD.
LIVERPOOL: 6 and 8, HATTON GARDEN.
GLASGOW: 47 & 49, ST. ENOCH SQUARE.